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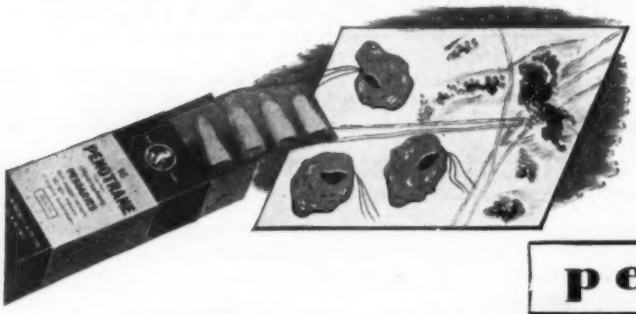

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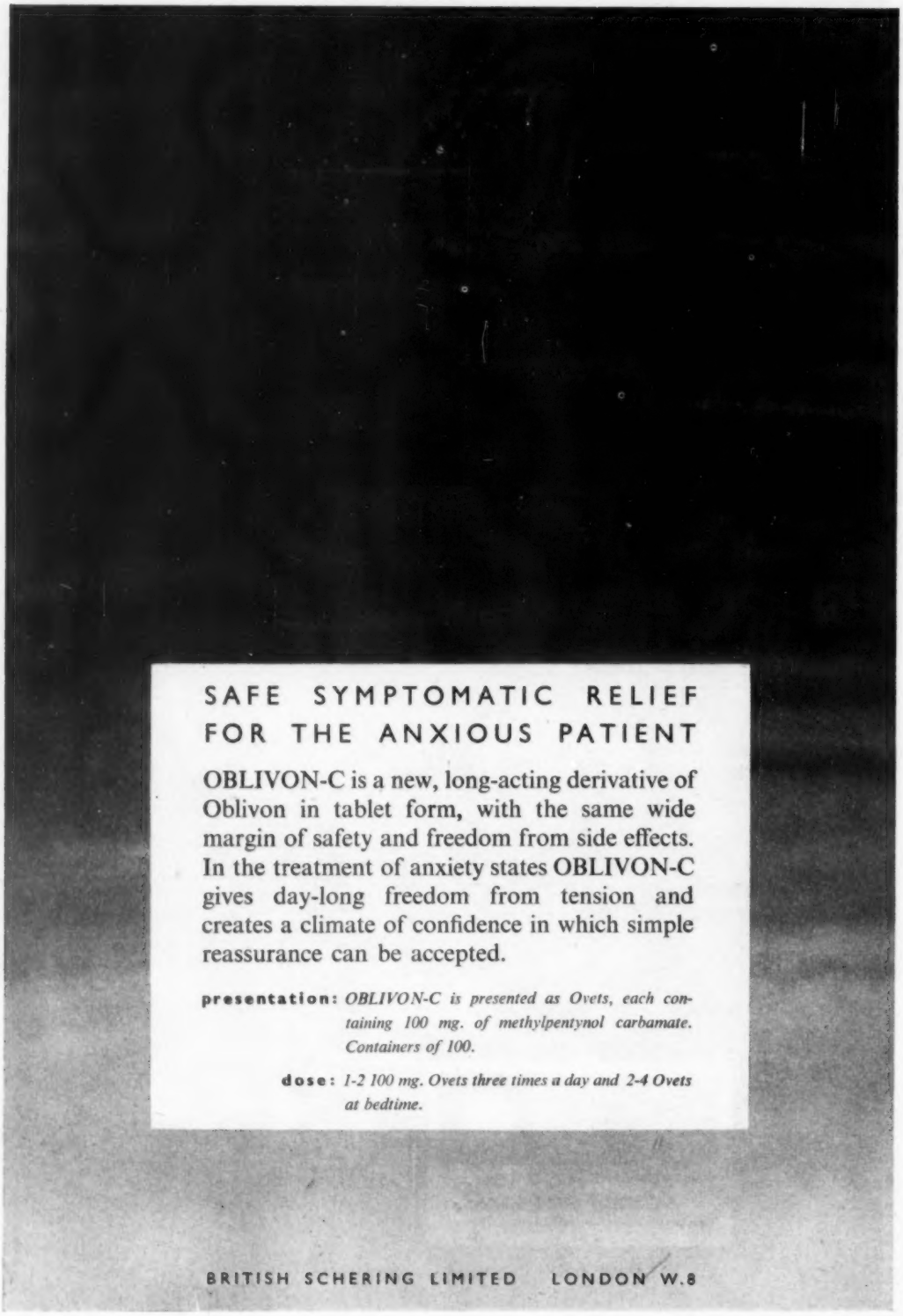
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'Vimaltol' contains malt extract, yeast, halibut liver oil and iron. Every ingredient used is rigidly tested for purity and quality, the final product being accurately standardized for vitamin content.

In addition to its vitamins, 'Vimaltol' provides valuable nutrients of undoubted assistance to infants, fast-growing children, nursing mothers and to those whose diet is inadequate or unbalanced. It helps to build up strength, weight and the natural powers of resistance. 'Vimaltol' is highly palatable—a decided advantage when recommending it for children.

A Product of the *'Ovaltine' Research Laboratories* M. 376

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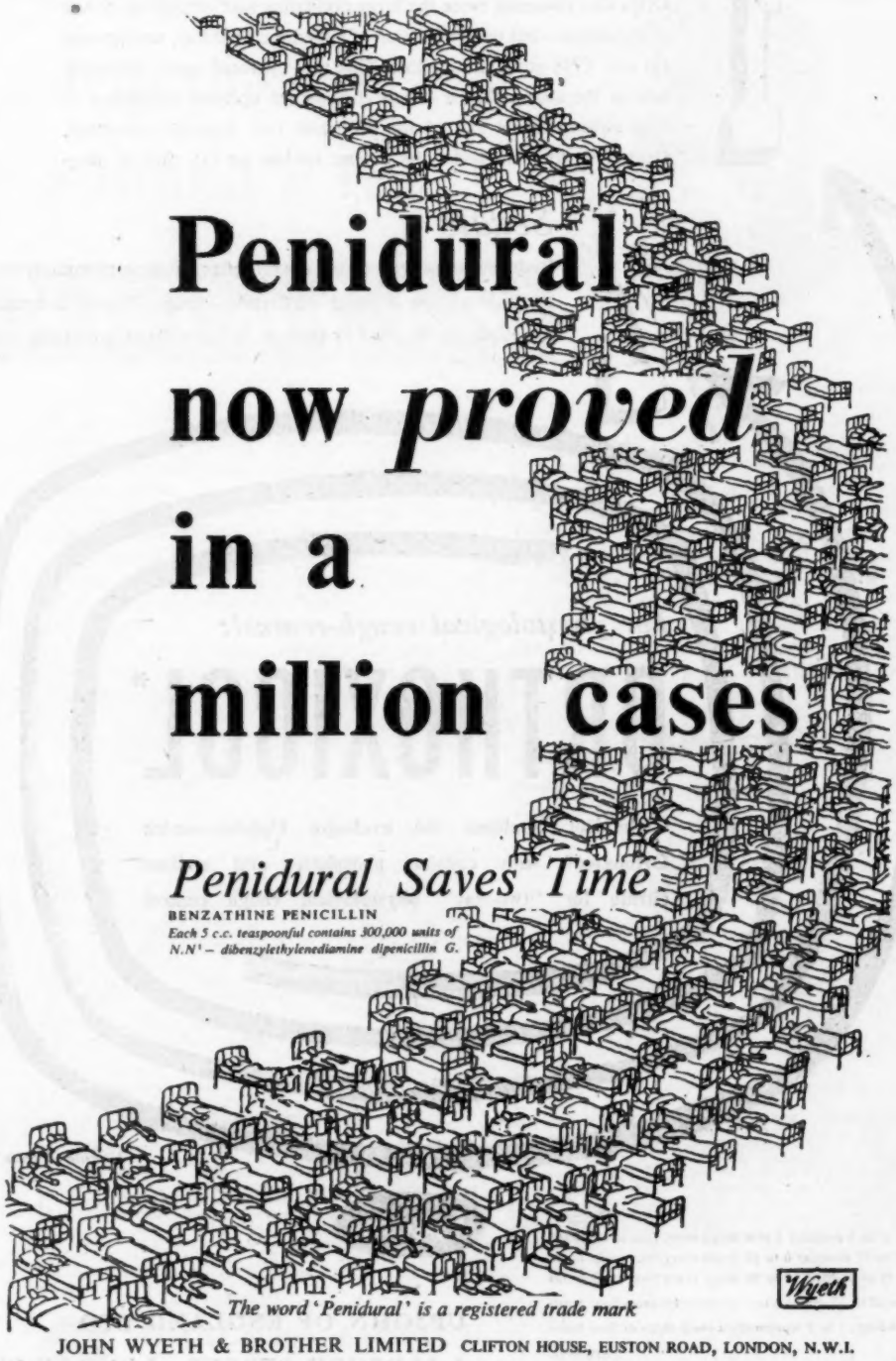
Standardized to contain in each ounce not less than
2,000 *i.u. Vitamin A;*
200 *i.u. Vitamin D;*
0.4 *mg. Vitamin* B_1;
0.3 *mg. Vitamin* B_2 *(Riboflavin);*
4 *mg. Niacin (P.P. Vitamin);*
3.3 *mg. Iron*
—in a readily assimilable form.



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Penidural Saves Time

BENZATHINE PENICILLIN

Each 5 c.c. teaspoonful contains 300,000 units of N.N¹ – dibenzylethylenediamine dipenicillin G.

The word 'Penidural' is a registered trade mark

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Orthoxine possesses twice the bronchodilating and ventilating power of ephedrine—but only a fraction of ephedrine's cardiac, vasopressor (½) and CNS stimulating effect. This well-tolerated agent efficiently relaxes the spasm that *is* cough and assures optimal ventilation to help sweep mucus out of the bronchial tree. Equally important, Orthoxine does not make the patient restless or rob him of sleep

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Reducing sensitivity of the cough reflex, codeine phosphate breaks the vicious cycle of cough—irritation—cough. Tenacious bronchial secretions are liquified by sodium citrate without producing nausea

For physiological cough-control:

ORTHOXICOL*

Orthoxicol combines the exclusive Upjohn—amine Orthoxine* with codeine phosphate and sodium citrate for "two-way" physiological cough control

**Registered Trade Mark*

Dosage:

Infants: (2 to 6 months) 3 to 6 drops every four to six hours
(6 to 12 months) 6 to 10 drops every four to six hours
(1 to 2 years) 10 to 20 drops every four to six hours

Children: (2 to 12 years) ½ to 1 teaspoonful every four hours

Adults: 1 to 2 teaspoonfuls every three or four hours

Supplied:
in bottles of 2 and 16 ounces

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Milk-alkali drip therapy without a tube

NULACIN

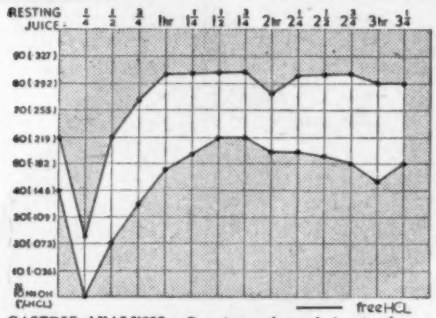
A most effective control of gastric acidity is milk-alkali drip therapy; the most convenient way of obtaining milk-alkali drip therapy is by sucking Nulacin tablets.

Thus, Nulacin is of great value in the treatment of peptic ulcer in the ambulatory patient, and in the prevention of ulcer relapse.

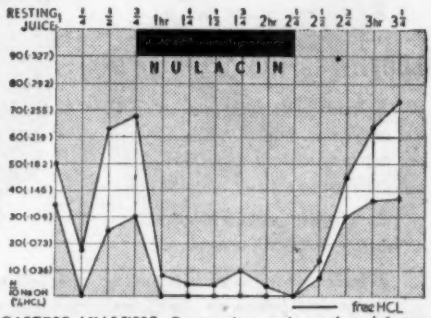
Nulacin tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium trisilicate 3.5 grs; Magnesium oxide 2.0 grs; Calcium carbonate 2.0 grs; Magnesium carbonate 0.5 grs; Ol. menth. pip. q.s. Their shape, size and consistency are such that, when they are allowed to dissolve slowly in the mouth control of gastric acidity can be achieved. Up to three tablets an hour may be required to give continuous neutralization of the gastric contents.

Nulacin tablets are not advertised to the public, have no B.P. equivalent, and may be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to Pharmacists is 2/-.) Also available in tubes of 12.

Nulacin is available throughout the British Commonwealth, in the U.S.A. and in many other countries. It is known as Nulactin in Canada and Sweden.



GASTRIC ANALYSIS. *Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.*



GASTRIC ANALYSIS. *Same patients as in graph on left, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.*

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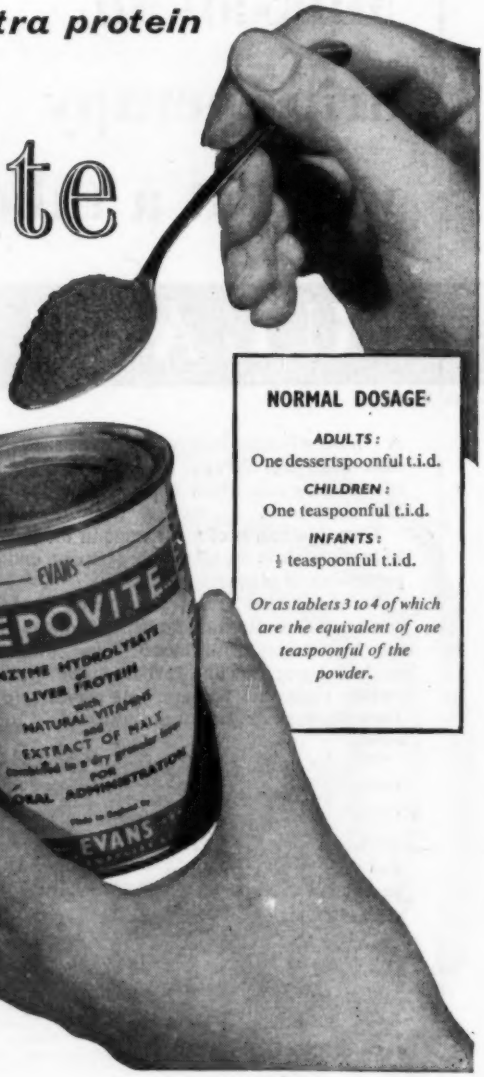
For all cases requiring extra protein

PRESCRIBE

Hepovite

An enriched protein supplement consisting of proteolysed liver, malt and vitamins A and D.



NORMAL DOSAGE

ADULTS:
One dessertspoonful t.i.d.

CHILDREN:
One teaspoonful t.i.d.

INFANTS:
½ teaspoonful t.i.d.

Or as tablets 3 to 4 of which are the equivalent of one teaspoonful of the powder.

Hepovite contains:

1 Proteolysed liver supplying all the essential amino acids, hæmopoietic factors derived from the liver and activated by proteolysis and members of the vitamin B complex (including Vitamin B_{12}).

2 Malt extract, supplying carbohydrate & additional vitamin B_1.

3 Vitamins A and D.

Hepovite is indicated in:

1 Inadequate protein intake: *anorexia, dietary inadequacy e.g. in peptic ulcer diets, food allergies, children intolerant of milk.*

2 defective protein absorption: *gastro-intestinal disorders.*

3 increased protein loss and/or metabolism: *fevers and infections (including tuberculosis), nephritis, steatorrhœa & sprue, ulcerative colitis, wounds and burns.*

4 increased protein requirements: *pregnancy, lactation, pre- and post-operative states.*

5 in liver cirrhosis and other liver diseases.

Hepovite has the advantage of being:

1 administered by the oral route **2** palatable **3** soluble (can be taken in milk, soup, etc.)

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EVANS MEDICAL SUPPLIES LTD.
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an all-round defence against

in all its phases

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FORMULA: *Acid Acetylsalicyl B.P. 40.22% Phenacet. B.P. 48.00% Caffein B.P. 2.00% Codein. Phosph. B.P. 0.99% Phenolphthal. B.P. 1.04% Excip. 7.75% (each tablet 8 grains)*

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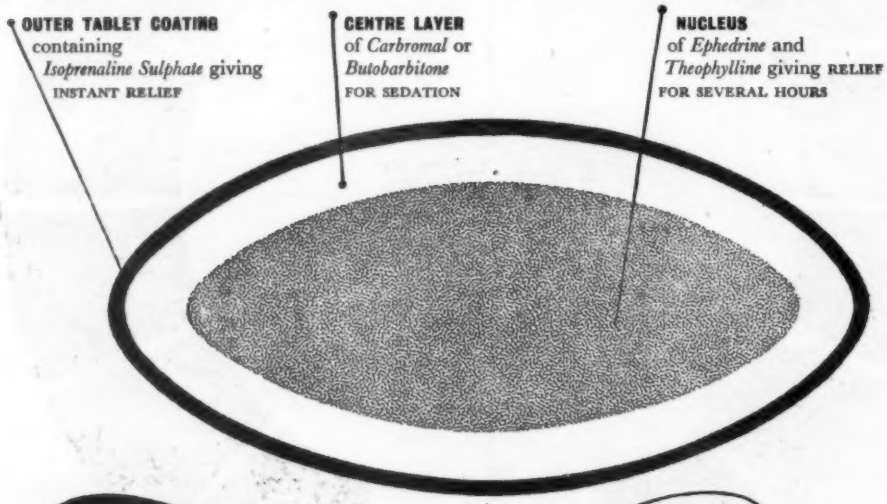
SUSTAINED RELIEF OF BRONCHIAL ASTHMA

PROVIDED BY RELAY ACTION IN A SINGLE TABLET



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FYDAL TABLETS, containing Butobarbitone, are intended for night use and should be taken when premonitory symptoms of an attack appear.

Formula: Ephed. Hydrochlor., B.P. 32 mg.
Theophyll., B.P. 64 mg.
Isoprenal. Sulph., B.P. 10 mg.
Butobarbitone, B.P.C. 48 mg.

Basic N.H.S. price . . . . foil-pack of 10 tablets . . . 1/8d.

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FYDALEX

FYDALEX TABLETS, contain Carbromal in place of Butobarbitone and are for use during the day. Like FYDAL, they provide immediate and prolonged relief.

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Used conjointly, FYDAL and FYDALEX provide an effective round-the-clock treatment and may be prescribed accordingly.

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*Methyl Nicotinate 1.0%
Glycol Salicylate 10.0%
Histamine Dihydrochloride 0.1%
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Excipient q.s.

Basic Price to N.H.S.: 1 oz. dispensing tube 1/9d. 16 oz. dispensing jar, per oz.—1/2½d.

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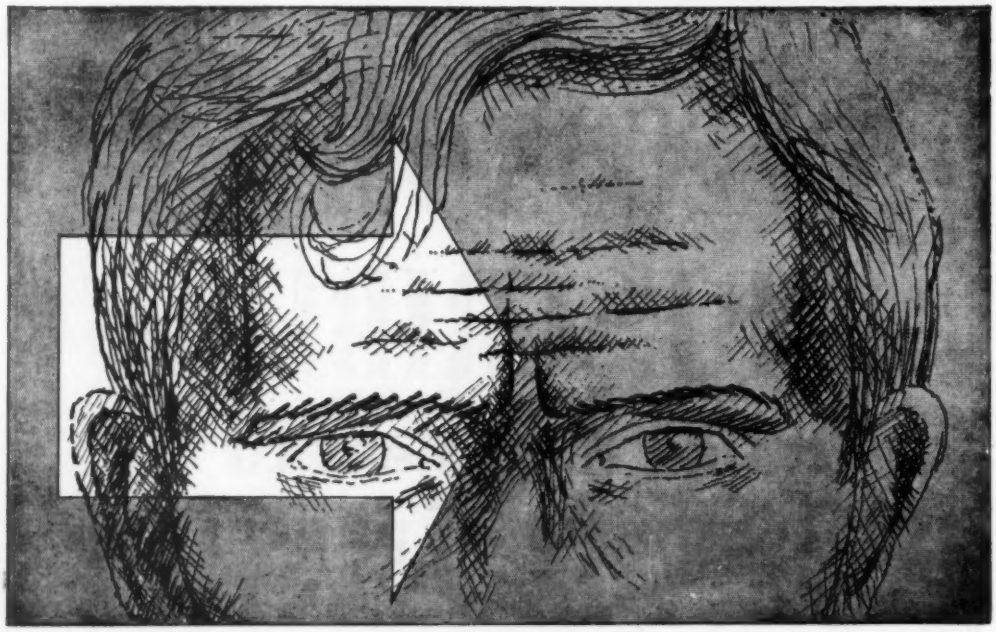

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It is often necessary to calm a feverish patient in addition to lowering his temperature.

Veganin is not only an antipyretic but also contains codeine phosphate to exert a sedative effect. The three ingredients of Veganin are carefully balanced to ensure maximum effect for the least dose. Under their synergistic influence, the patient is quickly soothed and his temperature safely reduced.

ACTIVE PRINCIPLES: *Acetylsalicylic acid 250 mg. Phenacetin 250 mg. Codeine phosph. 10 mg.*

DOSE: *1 or 2 tablets, 2 or 3 times a day, depending on the severity of the pain.*

PACKING: *Packs of 10, 20 and 50 tablets. Dispensing packs of 100 and 500 tablets available to chemists.*

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No Warner preparation has ever been advertised to the Public

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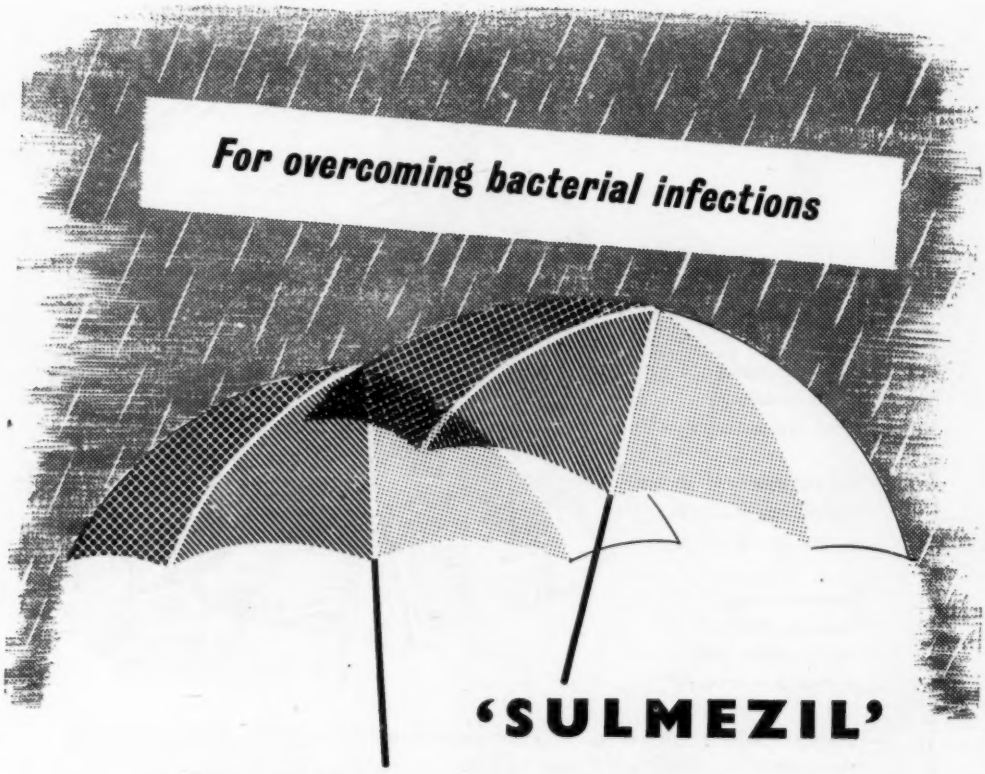

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"Versatile stuff, aspirin—
I see the rheumatism boys
now say it's as good as cortisone."

*"Yes, but nobody yet seems
to know how it works
or even its site of action."*

"Some professor suggested
the analgesic effect of salicylates
might be peripheral," at tissue level,
not central as we were taught."

*"Could be. That reminds me—some firm has put up a new
skin-penetrating salicylate in a vanishing cream
for local tissue pain by inunction."*

"Does it work? And isn't it irritating?"

*"Yes and no. I've used it and it works well,
even in osteoarthritis. It's not irritating at all,
just a means of using salicylate locally."*

"Sounds promising. I'd like to try it. What is it called?"

* Practitioner, 170, 513 (1953)

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10% diethylamine salicylate in a soothing vanishing cream

**non-irritant, skin penetrating salicylate
for the relief of rheumatic pain by inunction**

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"...an entirely new general anæsthetic... it bears no resemblance...to any group of drugs hitherto used or contemplated for this purpose..."[1]

Viadril is a steroid anæsthetic suitable for intravenous administration. Extensive clinical trials in a number of countries have shown that the use of Viadril as a basal anæsthetic is both practical and, in selected cases, most desirable. Viadril has no endocrinal side-effects.

"...it may be a forerunner of a new class of anæsthesia..."[2]

1 *Brit. Med. J.* (1956), ii, 129.
2 *Brit. J. Anaes.* (1956), 28, 67.

A concise review of the evidence currently available on Viadril will be forwarded upon request to: The Medical Services Department, Pfizer Ltd., Folkestone, Kent.

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New Eng. J. Med. (Feb. 3) 1949.
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DIAMOX Acetazolamide, in these and many other conditions, stands distinguished as the diuretic of proven effectiveness. So convincing is the documentary evidence, that today no practitioner will lightly disregard the potentialities of DIAMOX.

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THE *new* ANTIBIOTIC

FOR ORAL ADMINISTRATION

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- **is active by mouth**
- **is remarkably well tolerated**
- **does not interfere with the normal intestinal flora or irritate the gastric epithelium**

Because of these properties 'Rovamycin' is suitable for the treatment of the commoner infections, especially those of the lung, upper respiratory tract and middle ear. It is indicated also in the treatment of patients who are sensitized to penicillin or whose infections are due to staphylococci resistant to other antibiotics. Other suggested indications are non-specific urethritis and infections of the biliary tract.

'Rovamycin' is supplied as varnished tablets of 250 mgm. spiramycin base.

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SKIN DISEASE

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(Hydrocortisone - Neomycin Sulphate - Zinc Bacitracin)

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Quick onset - short duration.
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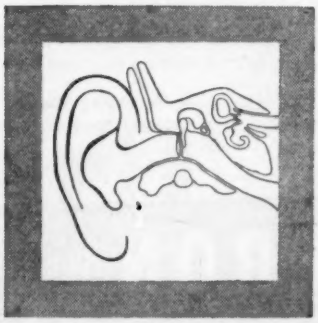

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"The Iron given parenterally was absorbed from the intramuscular site and utilised."[1]

"Utilisation for haemoglobin production was extremely good."[2]

"In every patient a satisfactory rise in the haemoglobin took place."[3]

"....all the patients in the series developed a vigorous sense of well-being which contrasted very strikingly with their previous chronic ill-health."[3]

"From the present series it appears that this new iron-dextran complex is a notable advance in the treatment of the iron-deficiency of pregnancy."[4]

1. LANCET, 1954, *2*, 942.
2. B.M.J., 1954, *2*, 1257.
3. B.M.J., 1954, *2*, 1255.
4. LANCET, 1954, *2*, 1245.

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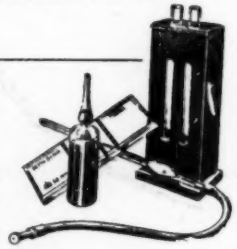
(Lancet, 1954, *2*, 1245).



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AMPOULES *5 ml. (250 mg.Fe) boxes 5 and 50*

Fully-descriptive literature, including dosage Calculator, on request. A Technical Information Service is at your disposal.

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Dispels headache
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'Migril' contains ergotamine tartrate (2 mgm.), caffeine (100 mgm.) and cyclizine hydrochloride (50 mgm.) in each tablet. The inclusion of cyclizine hydrochloride not only eliminates the nausea and vomiting often associated with migraine but also **enables larger and more effective doses of ergotamine to be administered.**

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PACKS OF 10 AND 100

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Linctus

An anti-tussive agent from the B.D.H. Research Laboratories

- Pectamol has a selective action on the medullary centre controlling the cough reflex thereby suppressing unproductive dry cough and moderating purposeful, productive cough.
- Aids expectoration.
- Free from soporific, nauseating, constipating or toxic effects.
- Contains no opiates or their derivatives.
- Pleasant tasting and well-tolerated.

The active constituent of Pectamol Linctus is the citrate of the diethylaminoethoxyethyl ester of α:α-diethylphenylacetic acid ('Oxeladin'). Each teaspoonful (3.55 ml.) contains 10 mg.

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Basic N.H.S. Price: Bottle of 60 ml. 2/6.

Descriptive literature and specimen packings will be supplied on request.

Medical Department:

THE BRITISH DRUG HOUSES LTD · LONDON, N.1

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M.Sc., M.B. Manc.
SENIOR LECTURER IN SPECIAL PATHOLOGY IN THE UNIVERSITY OF MANCHESTER

ATTENTION was first called to the possible importance of infection as a major cause of perinatal death by Priestley (1887), who recorded that in tedious, difficult, and complicated delivery there was a high fœtal loss: of 16,654 children born in hospital 1121 were stillborn, and 801 of these were either premature or, if full-time, putrid. In some cases, when the infant was stillborn or died shortly after birth, he found gross infection of the placenta.

Ahvenainen (1953) notes that 206 (54%) of 384 infants who died during the first week of life had histological evidence of pneumonia, and that pneumonia was the sole cause of death in 110 of 428 infants who died within a month after birth. The infants who died of pneumonia differed from control infants who had no histological evidence of pneumonia in two respects: (1) there was an increased proportion of birth injuries, and (2) there were more mature and large babies who were stillborn or died on the first day.

The opposite view was expressed by the Scientific Advisory Committee of the Department of Health for Scotland (1946), who stated that infection contributed little to the death of infants born in maternity hospitals and dying within the first fourteen days. In support of this they noted that 82% of all neonatal deaths in 1944–45 took place in the first three days of life "before infection could be a factor."

Many workers have observed that the lesions found post mortem in stillborn infants and in those dying shortly after birth are usually multiple, and it is often difficult to determine which lesion is the principal cause of death and which contributory. Thus the presence of pneumonia, which is the commonest evidence of infection, does not necessarily mean that infection was a significant cause of death.

Our experience suggests that infection plays a considerable part in the causation of perinatal mortality and morbidity. Therefore an investigation was designed to assess the significance of infection as a cause of death by determining if any clinical sign or combination of signs in the mother or in the fœtus would give an indication of infection in the fœtus in utero and, if so, to determine the value of specific antibiotic therapy. The clinical and therapeutic trials were supported by extensive bacteriological and pathological examinations. The study also included an examination of the underlying factors predisposing to perinatal infection with a view to determining indications for treatment, but the results of this part of the investigation are not discussed here.

Experience had shown that certain signs might be of diagnostic value, and a preliminary clinical and therapeutic trial was made during the first three months of 1955; but these findings and figures have not been utilised, because of the preliminary nature of the investigation. After the initial study had been completed, a more thorough trial was begun on April 1, 1955, and continued for four months.

Design of Trial

Two groups of women, who were either in labour or whose membranes had ruptured, were selected as follows from those admitted to hospital.

(1) Those thought to have an intra-partum infection according to the criteria given below. This series was further divided by strict alternation into antibiotic and non-antibiotic treated groups.

(2) Controls, in whom no intra-partum infection was suspected, consisting of every fifth patient admitted in labour. If, however, a patient in this group developed what were believed to be signs of an intra-partum infection, she was transferred to the infected group. There are obvious shortcomings in this control group: a lessening of the number of cases of toxæmia, and a lowering of the incidence of surgical induction of labour. Thus the complicating effect of toxæmia is not the same in the infected and in the uninfected controls, but it is the same in the antibiotic treated and non-antibiotic treated infected groups.

A diagnosis of intra-partum infection was based on two criteria:

(1) Maternal pyrexia (98·6°F or above). All the patients in labour in the hospital had their temperatures recorded four-hourly.

(2) Fœtal tachycardia (160 or more, sustained for at least ten minutes, three observations lasting twenty seconds being made with a stop-watch and checked by a house-surgeon).

The presence of either of these criteria was taken to indicate ntra-partum infection.

A full bacteriological examination was made in both the presumed intra-partum infection and the uninfected groups. The specimens examined were as follows:

(1) Two high vaginal swabs: one on admission to the labour room or at the first sign of infection, and the other in the third stage of labour.

(2) A catheter specimen of urine on admission to the labour room or at the first sign of infection.

(3) A sample of fœtal blood from the placenta for blood-culture.

(4) If the fœtus was stillborn or the baby died, specimens were examined from the heart blood, bronchus, and lung.

The pathological examination consisted of:

(1) Naked-eye and microscopical examination of the placenta from all patients in both groups.

(2) Necropsy of all stillbirths and babies dying in hospital. This included an extensive histological examination of the organs, particular emphasis being placed on the tissues obtained from lungs. Consent for necropsy was not obtained in two instances.

For the purpose of the therapeutic trial alternate women admitted into the group believed to have an intra-partum infection were given combined antibiotics: intramuscular streptomycin 1·0 g. twice daily and oral oxytetracycline 500 mg. six-hourly. This treatment was given from the time the infection was believed to be diagnosed until the patient was delivered. Because the organisms were unidentified on admission to the trial, a combination of two antibiotics was used.

Results of Clinical Investigation

The physical signs—maternal pyrexia and fœtal tachycardia—seem to indicate the possibility of perinatal death. This is shown in table I for the cases in the untreated infected group. Where there was maternal pyrexia without tachycardia, 6 (11·5%) of 52 infants died in the perinatal period. In 4 cases fœtal tachycardia alone was noted, but none of the infants concerned died. Where maternal pyrexia and fœtal tachycardia were both recorded, 4 (33%) of 12 infants died. In the absence of maternal pyrexia and fœtal tachycardia none of 99 babies died.

TABLE I—SIGNS IN RELATION TO DEATH OF INFANTS IN UNTREATED SECTION OF PRESUMED INFECTED GROUP CONTRASTED WITH UNINFECTED CONTROLS

Sign	No. of cases	No. of infants dying
Maternal pyrexia	52	6 (11·5%)
Fœtal tachycardia	4	0
Maternal pyrexia and fœtal tachycardia	12	4 (33·0%)
Presumed non-infected group (no maternal pyrexia or fœtal tachycardia)	99	0

Table II shows the incidence of notifiable puerperal pyrexia in the presumed uninfected group and in the untreated section of the infected group. In the absence of the signs there were 5 cases of puerperal pyrexia (5·1%). On the other hand, in the untreated infected group there were 18 cases in 68 patients (26·5%). This is most unlikely to be fortuitous.

Table III shows the perinatal mortality and its association with pneumonia in the various groups. Whereas there were no deaths in the uninfected group, 10 babies died in the untreated section of the infected group (14·7%). Of these deaths 5 were associated with histological evidence of pneumonia.

TABLE II—INCIDENCE OF PUERPERAL PYREXIA (100·4°F OR ABOVE)

—	Presumed uninfected group	Presumed infected not treated with antibiotics
No. of patients	99	68
No. of puerperal pyrexias	5 (5·1%)	18 (26·5%)

The pathogenic organisms associated with perinatal deaths were mainly *Escherichia coli*, *Streptococcus fæcalis*, non-hæmolytic streptococci, and rarely a hæmolytic streptococcus. The results of the bacteriological investigation are summarised in tables IV and V. Table IV shows that 38% and 32% of presumed uninfected women had pathogenic organisms in the upper vagina, but only 2% of placental blood-cultures were positive. In the untreated infected group the corresponding percentages were 73% and 50%, with 13% of positive placental blood-cultures. Furthermore in certain instances in which there was a fatal pneumonia in the infants the

TABLE III—PERINATAL MORTALITY AND ITS ASSOCIATION WITH PNEUMONIA

Group	No. of mothers	No. of deaths	No. with pneumonia	Deaths with pneumonia (%)
Presumed uninfected	99	0	0	0
Infected but not treated with antibiotics	68	10 (14·7%)	5	50

vaginal swab, the placental blood, and the lung culture all showed the same organisms: *Strep. fæcalis*, *Esch. coli*, group-A hæmolytic streptococcus, and non-hæmolytic streptococci. In one instance the mother and the infant both died and both showed evidence of pneumonia. Type-B influenza virus was isolated from the mother's lung, but unfortunately the infant's lung was not examined for this.

Table VI shows the perinatal deaths in the infected untreated group and their relation to the known duration of infection. By duration of infection is meant from the first sign of infection until the patient is delivered —i.e., the duration of exposure of the fœtus to infection. Since some of the mothers continued to have pyrexia after delivery, it does not mean the duration of infection in the mother. Table VI shows that most of the deaths concerned patients in whom the signs of infection had lasted more than forty-eight hours; all the pneumonias were in this group.

Results of Antibiotic Therapy

Since the cases in the presumed infected group were to be divided into those to be treated with antibiotics and those not to be so treated, it was necessary to see if the presenting signs of infection were evenly distributed. Table VII shows that in the 68 untreated cases and in the 69 treated cases maternal pyrexia and fœtal tachycardia were very evenly divided between the cases in the two subgroups, and so there did not appear to be any bias. Likewise, a comparison of age, parity, social class,

TABLE IV—ISOLATION OF PATHOGENIC ORGANISMS

Group	High vaginal swab		Placental blood
	First	Second	
Presumed uninfected	38%	32%	2%
Infected but not treated with antibiotics	73%	50%	13%

toxæmia, surgical interference, and prolonged labour showed no significant difference between the patients assigned to the two infected groups.

The results of antibiotic therapy are shown in tables VIII–XI. In these tables the duration of infection in the antibiotic series is the same as the duration of the treatment because the patients in this series received their first dose of therapy as soon as the infection was diagnosed.

Table VIII shows that in 68 infected non-antibiotic cases the number of notifiable pyrexias was 18 (26·5%). In the 69 antibiotic cases there were 9 puerperal pyrexias (13%). The perinatal mortality (table IX) shows a similar

TABLE V—RESULTS OF LUNG CULTURES IN PRESUMED INFECTED GROUP NOT TREATED WITH ANTIBIOTICS

No. examined at necropsy	No. with pathogens	No. with pneumonia	No. with pathogens and pneumonia
10	9	5	4

reduction. In the 68 non-antibiotic cases 10 infants died (14·7%), and 5 of these 10 showed no histological evidence of pneumonia. On the other hand, in the 69 antibiotic cases there were 5 perinatal deaths (7·3%). There was no pneumonia in this group. Although this difference in mortality-rate is not significant in the technical sense ($P = 0.13$ by Fisher's exact test), the effect of antibiotic therapy is seen in table X to be restricted to the group in which signs of infection had lasted more than forty-eight hours. Here there is a significant difference ($P = 0.04$) between the death-rates in the treated and untreated series. There appears to be a shortening in the period of exposure to infection in the infants whose mothers received antibiotic therapy, but there is also a lowering of the death-rate among

TABLE VI—PERINATAL DEATHS AND KNOWN DURATION OF INFECTION IN PRESUMED INFECTED GROUP NOT TREATED WITH ANTIBIOTICS

Duration of infection (hr.)	No. of infants born	No. of infants who died in perinatal period
0–23	45	2 (4·4%)
24–47	11	0
48+	14	8 (57%)
Total	70	10 (14%)

See footnote to table X.

TABLE VII—DISTRIBUTION OF PRESENTING SIGNS IN TREATED AND UNTREATED SECTIONS OF INFECTED GROUP

Signs	No. showing signs	
	Untreated group	Treated group
Maternal pyrexia	60	60
Fœtal tachycardia	7	8
Fœtal tachycardia (temperature not recorded)	1	1
Total ..	68	69

the babies of these mothers where prolonged pyrexia suggested a more severe infection.

From the bacteriological results also it appears that therapy exerted a controlling influence on the infection. Table XI shows that, where no antibiotic treatment was given, the incidence of pathogenic organisms in the first and second high vaginal swabs was 73% and 50% respectively. In the treated group the incidences were 63% and 30%.

There was a similar difference in the results of placental blood-cultures. In the untreated group 13% showed positive cultures whereas in the treated group 7% were positive. When the results of lung cultures were compared

TABLE VIII—RESULTS OF ANTIBIOTIC TREATMENT

Group	No. of infected cases	No. of cases of puerperal pyrexia
No antibiotic	68	18 (*26·5%*)
Antibiotic	69	9 (*13·0%*)

9 of the 10 babies examined showed positive cultures in the untreated group. In the treated group 3 of the 5 infants who died in the perinatal period had pathogenic organisms in their lungs.

Discussion

It appears likely that the best single criterion of potential fœtal infection is maternal pyrexia, because all the cases of perinatal death due to infection in the untreated group showed this sign. The prognosis for the infant is relatively worse if the pyrexia lasts more than forty-eight hours and is associated with fœtal tachycardia maintained for at least ten minutes.

It may be asked whether intra-partum pyrexia implies maternal and even fœtal infection or whether it is possible

TABLE IX—PERINATAL MORTALITY AND ITS ASSOCIATION WITH PNEUMONIA

Group	No. of infected cases	No. of deaths	No. with pneumonia	Deaths with pneumonia (%)
No antibiotic ..	68	10 (*14·7%*)	5	50
Antibiotic ..	69	5 (*7·3%*)	0	0

for it to occur as a result of increased metabolic processes. There is some evidence to show that the pyrexia is infective in origin. Notifiable puerperal pyrexia occurred more frequently in the untreated believed infected group than in the uninfected group (26·5% compared with 5·1%). The increased frequency of possible pathogenic bacteria in the vagina in the infected untreated group compared with the uninfected group supports the likelihood of an infective origin of the pyrexia. Furthermore, inflammation of the placenta is three or four times as common in the untreated infected group as in the uninfected group. This evidence indicates that infection plays an important rôle in causing intra-partum pyrexia, but it does not exclude metabolic factors from playing a part.

The mechanism of fœtal infection may be explained as follows. Bacteria commonly found in the vagina, or introduced by the attendant, enter the uterus by the cervical canal and infect the decidua. In some women, but by no means all, infection spreads to the placenta or membranes or both. Often the infection gets no further, but sometimes it spreads to the fœtus by the fœtal blood-stream or by aspiration of infected liquor. The effect of perinatal infection is usually relatively slight on the mother but can be disastrous for the infant, because organisms of relatively low virulence for the mother have a much greater effect on the infant, who has

TABLE X—PERINATAL DEATHS IN PRESUMED INFECTED GROUP

Duration of signs (hr.)	No antibiotic therapy		Antibiotic therapy	
	No. of babies*	No. of deaths	No. of babies	No. of deaths
0–23	45	2 (*4·4%*)	56	4 (*7·1%*)
24–47	11	0	5	0
48 +	14	8 (*57%*)	9	1 (*11·1%*)

* In the untreated group there were 2 sets of twins. In the treated group there was 1 set of twins. All these babies survived.

little or no immunity. Such a concept is consistent with the higher frequency of puerperal pyrexia in infected cases than in controls.

The bacteriological studies of the vaginal flora suggest that antibiotic therapy reduces the incidence of potential pathogens. The effect on the fœtus may therefore be twofold; antibiotic therapy may eliminate some or even all of the organisms in the vagina so that infection of the fœtus is prevented; or, if the infection is estab-

TABLE XI—ISOLATION OF PATHOGENIC ORGANISMS

Group	High vaginal swab		Placental blood
	First	Second	
No antibiotic ..	73%	50%	13%
Antibiotic ..	63%	30%	7%

	Results of lung cultures			
	No. examined at necropsy	No. with positive cultures	No. with pneumonia	No. of positive cultures in pneumonia cases
No antibiotic ..	10	9	5	4
Antibiotic treated	5	3	0	0

lished in the fœtus, it may control it and facilitate recovery. Furthermore, the combination of antibiotics used in this investigation tends to reduce the possible development of resistant strains of organisms. Eastman (1955) administered penicillin to a group of mothers whose membranes had ruptured early. He noted no difference in the incidence of intra-partum fever or perinatal death. This is not surprising, because the organisms which commonly cause perinatal death are relatively insensitive to penicillin.

Conclusions

Fœtal infection can be diagnosed on maternal pyrexia and persistent fœtal tachycardia as the main criteria.

Intra-partum pyrexia is associated with an increased incidence of pathogenic organisms in the genital tract.

Pneumonia in the fœtus is commonly associated with evidence of intra-partum infection lasting more than forty-eight hours in the mother. Because the organisms are of low virulence for the mother, the signs are not very conspicuous.

The treatment of patients with intra-partum infection with combined streptomycin and oxytetracycline seems to reduce perinatal death by preventing infection of the fœtus. This reduction in death can only be shown to be significant if it has been possible to treat the mother for at least forty-eight hours before delivery.

Our thanks are due to Prof. W. I. C. Morris and the members of the medical committee of St. Mary's Hospitals, Manchester, for permission to make this investigation, and to Dr. D. D. Reid for assisting with the design of the trial and the assessment of the results. Messrs. Pfizer Ltd. provided generous supplies of streptomycin and oxytetracycline.

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SPORADIC NON-ENDEMIC GOITROUS CRETINISM

IDENTIFICATION AND SIGNIFICANCE OF MONOIODOTYROSINE AND DIIODOTYROSINE IN SERUM AND URINE

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GOITROUS cretinism occurring sporadically outside areas of endemic goitre has previously been reported. Such cases have usually been familial (Osler 1897, Hamilton et al. 1943, Lerman et al. 1946, Hurxthal and Musulin 1946, Hurxthal 1948, Stanbury and Hedge 1950, Stanbury 1951, Hubble 1953, McGirr and Hutchison 1953, Hutchison and McGirr 1954, Wilkins et al. 1954, Sexton and Mack 1954, Stanbury et al. 1955a and b). The pathogenesis has not always been identical. The arrest of synthesis of the thyroid hormone has been described at three different levels:

(1) An inability to incorporate inorganic iodide into an organic iodine-containing compound (Stanbury and Hedge 1950).

(2) An impaired ability to couple two molecules of diiodotyrosine to yield thyroxine (Stanbury et al. 1955b).

(3) The hormone precursors monoiodotyrosine and diiodotyrosine may escape from the thyroid gland, with loss of their iodine, which is normally conserved within the gland (Stanbury et al. 1955a).

It appears to be only a matter of time until blocks at other stages of synthesis of the hormone are discovered.

We have already described the results of radioactive iodine (^{131}I) studies in 13 patients with non-endemic goitrous cretinism, 8 of whom were members of a family group of itinerant tinkers (McGirr and Hutchison 1953, Hutchison and McGirr 1954). We postulated that in them there was an intrinsic defect in the synthesis of the thyroid hormone. Study of the pedigree of the tinker family suggested that this defect was determined by the activity of a single autosomal recessive gene (Hutchison and McGirr 1956). Recently we have had the opportunity to investigate 2 additional hypothyroid goitrous members of this tinker group. We have given preliminary notice of the discovery of diiodotyrosine in the urine of 1 of them (McGirr and Hutchison 1956). We now report that we have identified monoiodotyrosine and diiodotyrosine, as well as thyroxine, in the blood of the other, and that the iodotyrosyl compounds are also present in her urine.

Case-reports

Case 1.—A male infant, aged 4 weeks, was admitted to hospital on July 21, 1953. His family inter-relationships are shown in the pedigree which we have published (Hutchison and McGirr 1956) and in which he is IV.10. On admission he had a large goitre but no sign of hypothyroidism. On Nov. 19, 1955, he was admitted to hospital because of severe constipation. He then appeared obviously hypothyroid and still had a goitre. He weighed 26 lb. and his height was 32¾ inches. His pulse-rate was 80–100 (normal 120). Mentally he was dull and apathetic. His blood-cholesterol level was 120 mg. per 100 ml. Moderate anæmia was present; Hb 9·24 g. per 100 ml. and red cells 4,110,000 per c.mm. Radiography showed six months' delay in ossification. Electrocardiographs were normal.

Progress.—His response to thyroid medication, started on Dec. 16, 1955, was remarkable. Within two weeks his face was no longer myxœdematous, and he was beginning to repeat single words and had become lively. On Jan. 11, 1956, his blood-cholesterol level was 70 mg. per 100 ml.

Case 2.—A woman, age 24, was admitted to hospital on March 11, 1956. She is III.21 in the pedigree (Hutchison and McGirr 1956). She had had an enlarged thyroid for many years but did not know at what age it had developed. She had been examined by one of us two years previously, when she was obviously hypothyroid. During the past year she had been taking an unknown amount of dry thyroid prescribed for her cretinous brother and sister. At the time of her admission she had lost her hypothyroid appearance and was thyrotoxic. Her thyroid gland was diffusely enlarged to a considerable degree. Her disposition was happy, but she was simple and illiterate. During the forty days she was in hospital without thyroid medication all signs of thyrotoxicosis disappeared, and she again became obviously myxœdematous. The amount of protein-bound iodine (^{127}I) in her serum was estimated as 1·8 μg. per 100 ml.

Progress.—We had planned a thyroidectomy for cosmetic reasons, when she left hospital abruptly to join the annual summer migration of her family. She was restarted on dry thyroid gr. ½ twice daily.

Methods

The accumulation and retention of ^{131}I in the thyroid gland was measured by a Geiger-Müller counter placed 30 cm. from the manubrial notch; a correction was made for back-scatter. The radioactivity of samples of blood serum and urine was estimated in a liquid scintillation counter. Protein-bound ^{131}I (PBI^{131}) of serum was

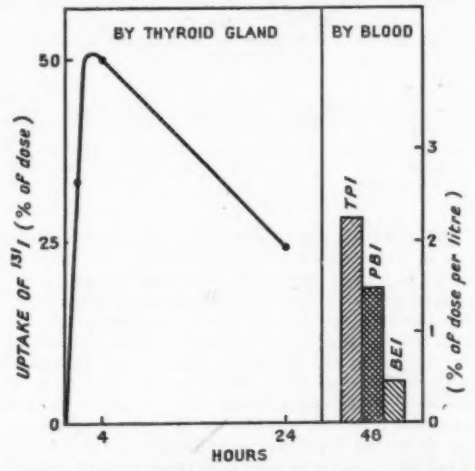

Fig. 1—Case 1: accumulation and retention of ^{131}I in thyroid gland, and serum fractions at 48 hours, TPI, total ^{131}I, PBI protein-bound ^{131}I, BEI butanol-extractable ^{131}I.

determined after precipitation with trichloracetic acid. Butanol-extractable ^{131}I (BEI^{131}) of serum and urine was measured after samples had been brought to pH 2 with normal sulphuric acid, extracted with *n*-butanol, and the butanol-extracts had been re-extracted with 5% sodium carbonate in 4N sodium hydroxide.

Serum and urine for chromatographic analysis were likewise extracted with *n*-butanol after acidification. The extracts were evaporated to dryness, and the residue was taken up in methanol-ammonia and placed on Whatman no. 1 filter paper. Ascending chromatograms were prepared; one-way chromatograms were run for about 25 cm. in butanol-acetic-acid or butanol-dioxane-ammonia solvents; two-way chromatograms were run firstly in butanol-phosphate buffer solvent and then in butanol-dioxane-ammonia solvent. The markers were stained with palladium chloride (iodide) and ninhydrin (monoiodotyrosine, diiodotyrosine, thyroxine, triiodothyronine) sprays. Some of the one-way strips were cut into 1-cm. lengths, and their radioactivity was assayed with an end-window Geiger-Müller tube. Others of the one-way strips and the two-way chromatograms were applied to non-screen X-ray film, and autoradiographs were prepared.*

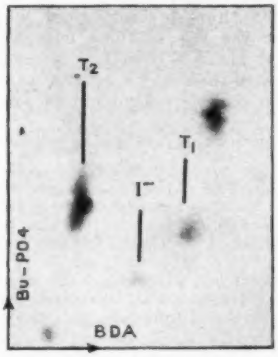

Fig. 2—Autoradiograph of chromatogram of 0–6 hour urine of case 1, two-way ascending chromatogram: first solvent butanol-phosphate buffer (Bu-PO4); second solvent butanol-dioxane-ammonia (BDA). Radioactivity is identified with iodide (I^-), monoiodotyrosine (T_1), and diiodotyrosine (T_2). Two spots of unidentified radioactivity are also present.

Results

Case 1 (figs. 1–3).—On Dec. 12, 1955, he was given by mouth 100 μC of carrier-free ^{131}I. An uptake by the thyroid gland of 50% of the ingested dose at 4 hours had fallen by 24 hours to 24%. The total serum radioactivity after 48 hours was 2·2% of the dose per litre; 1·4% per litre was PBI^{131} and 0·5% per litre was BEI^{131}. Fractionation of urine collected between 6 and 48 hours indicated that 37·6% was not butanol-extractable; 62·4% was extracted by butanol; and 60·8% was re-extracted by alkali and was therefore diiodotyrosine-like.

Radioactivity in the butanol extracts of the serum was too low for identification. In the autoradiographs prepared from 0–6 and 6–48 hour urinary chromatograms iodide, monoiodotyrosine, and diiodotyrosine were identified. An unidentified zone of radioactivity was present near the origin of all the chromatograms. There was also an unidentified zone of radioactivity overriding the end of the thyroxine-triiodothyronine zone in the butanol-acetic-acid chromatograms. A second unidentified spot of activity was present in the two-way chromatograms close to, if not identical with, the site of thyroxine.

* In the reproductions of the autoradiographs of the chromatograms the zones of iodide, monoiodotyrosine, diiodotyrosine, triiodothyronine, and thyroxine have been identified by the shorthand terms I^-, T_1, T_2, T_3, and T_4. T_1 and T_2 should properly be reserved for monoiodothyronine and diiodothryonine. MIT and DIT might have been preferable symbols for monoiodotyrosine and diiodotyrosine.

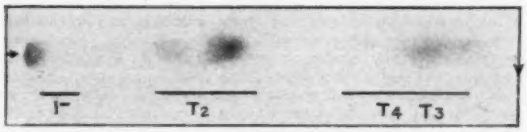

Fig. 3—Autoradiograph of chromatogram of 6–48 hour urine of case 1, one-way ascending chromatogram: butanol-acetic-acid solvent. Radioactivity is readily identified with diiodotyrosine (T_2). Unidentified zones are present near the origin and towards the end of the thyroxine-triiodothyronine (T_4-T_3) zone. Blackening due to radioactivity of iodide (I^-) and monoiodotyrosine (T_1) is present but not intense enough to reproduce; radioactivity due to these substances was confirmed in two-way chromatogram of 6–48 hour urine.

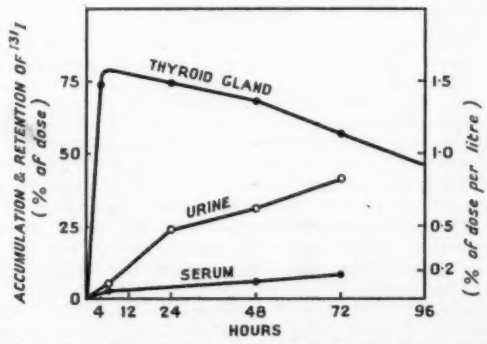

Fig. 4—Accumulation and retention of ^{131}I in thyroid gland, urinary excretion of ^{131}I and serum PBI^{131}, in case 2. (Serum-PBI^{127} = 1·8 μg. per 100 ml.)

Case 2 (figs. 4–6).—On March 19, 1956, she was given 50 μC of carrier-free ^{131}I. An uptake by the thyroid gland of 75% of the dose at 4 and 24 hours had fallen to 56% in 72 hours. The total serum ^{131}I after 48 hours was 0·3% of the dose per litre; 0·1% per litre was PBI^{131}.

On March 23, 1956, case 2 was given by mouth 1 mC of ^{131}I. Samples of blood were withdrawn at 6, 24, 48, and 72 hours, and all urine was collected at the same times. In the serum chromatograms iodide, monoiodotyrosine, diiodotyrosine, and thyroxine were identified. Iodide, monoiodotyrosine, and diiodotyrosine zones of radioactivity were more pronounced in the 6-hour serum. By 48 hours the thyroxine-triiodothyronine zone showed the greatest activity. In the urinary chromatograms iodide, monoiodotyrosine, and diiodotyrosine were identified, but (as in case 1) an unidentified zone of radioactivity was found near the origin of the chromatograms. Unidentified radioactivity was also present overlying and overriding the thyroxine-triiodothyronine zone in both the butanol-acetic-acid and butanol-dioxane-ammonia strips and after both the 50 μC and the 1 mC doses. It persisted in the chromatograms run in butanol-dioxane-ammonia with eluate from this zone which had been hydrolysed with hydrochloric acid for 1 hour at 60°C. Other unidentified spots of radioactivity were also present in the two-way chromatograms of the 0–6 and 6–24 hour urine at sites approximating to thyroxine and triiodothyronine.

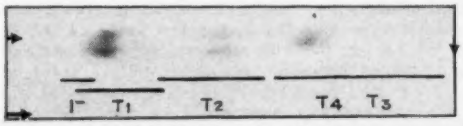

Fig. 5—Autoradiograph o chromatogram of 6-hour serum o case one-way ascending chromatogram: butanol-acetic-acid solvent Radioactivity is identified with iodide (I^-), monoiodotyrosine (T_1), diiodotyrosine (T_2), and thyroxine (T_4). Two-way chromatogram clearly separated iodide and monoiodotyrosine and showed that both were present.

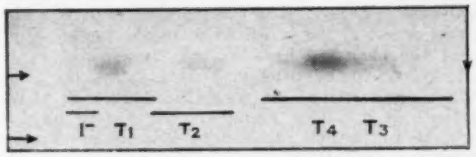

Fig. 6—Autoradiograph of chromatogram of 48-hour serum of case 2, one-way ascending chromatogram: butanol-acetic-acid solvent. Radioactivity is identified with monoiodotyrosine (T_1), diiodotyrosine (T_2), and thyroxine-triiodothyronine (T_4-T_3).

Discussion

The results of the ^{131}I tests in these 2 patients are similar to those already reported in the 8 other affected members of this tinker group (Hutchison and McGirr 1954). They confirm that hypothyroidism can occur in the presence of an enlarged thyroid gland, which is able and eager to take up iodine, to link it to protein, and to release it into the circulation in an organic form. In addition, however, they reveal the identity of the protein-bound iodine. They establish beyond reasonable doubt that monoiodotyrosine and diiodotyrosine, as well as some thyroxine, were present in the serum of one of the patients, and that monoiodotyrosine and diiodotyrosine were excreted in the urine in both. After the administration of ^{131}I very little (Benua and Dobyns 1955), if any (Rosenberg 1951, Dingledine et al. 1955), free monoiodotyrosine or diiodotyrosine appears in the serum. Costa et al. (1953) identified diiodotyrosine in 2 patients with endemic cretinism, and Stanbury et al. (1955a) identified monoidotyrosine and diiodotyrosine in the blood of a patient who was a sporadic goitrous cretin.

Elsewhere we have suggested that the rapid loss of radioactivity from the thyroid gland in our patients was due to the release of an organic iodine compound which was not the thyroid hormone (which was not metabolised) but was rapidly excreted in the urine (Hutchison and McGirr 1954). The identification of monoiodotyrosine and diiodotyrosine in the blood of one of our patients and in the urine of both confirms this contention. The loss from the thyroid gland of these hormone precursors and of the iodine contained therein probably explains the development of hypothyroidism in our patients. As a consequence increased production of thyrotrophin causes enlargement of the thyroid gland in an unsuccessful attempt to maintain an adequate output of hormone. The clinical signs of hypothyroidism in case 2 were reflected in the low value of the serum PBI^{127}—1·8 μg. per 100 ml.—which indicates that the production of hormone was inadequate. By contrast the serum PBI^{131} or BEI^{131} levels of our patients have been a misleadingly high index of the production of hormone. This is due in part to the precipitation by trichloracetic acid of monoiodotyrosine and diiodotyrosine with the proteins, and in part to the very rapid production and secretion of inadequate amounts of hormone with a large number of its molecules labelled with ^{131}I (Blom and Terpstra 1953). It is important to emphasise, however, that the primary fault is a fundamental defect in the synthesis of the hormone. Opinion about the chemical basis of the unidentified zones of radioactivity in the urine chromatograms of our patients remains speculative. It seems unlikely that they are products of radiation damage. Some may be due to conjugates of either monoiodotyrosine or diiodotyrosine (Stanbury et al. 1956).

Roche and Michel (1955) suggested that monoiodotyrosine and diiodotyrosine do not normally appear in the blood, when they are released from storage in the colloid, because they are deiodinated in the thyroid gland by the enzyme dehalogenase, and the iodine thus conserved is reutilised in the production of hormone. Stanbury et al. (1955a) refer to this hypothesis, and later studies by this group of workers (Querido et al. 1956) in another related goitrous cretin revealed that thyroid tissue removed at operation could not deiodinate diiodotyrosine as does normal thyroid tissue. We have not had the opportunity of doing a thyroidectomy in any of our patients, but it appears probable that the primary deficiency in them is of the enzyme dehalogenase. The possibility that there is an impaired ability to couple two molecules of diiodotyrosine to yield thyroxine, with the result that the iodotyrosyls accumulate in the thyroid gland and spill over into the blood, is excluded by the fact that, in the patient in whom Stanbury et al. (1955b) did find this defect, monoiodotyrosine and diiodotyrosine were not present in the peripheral blood.

Summary

The clinical features and the results of ^{131}I tests in 2 tinker patients with familial goitrous hypothyroidism are presented.

The ^{131}I results are similar to those already reported in 8 other affected members of this tinker group. They confirmed that hypothyroidism may occur despite an enlarged thyroid gland, which is able and eager to take up iodine, to link it to protein, and to release it into the circulation in an organic form. In addition, however, monoiodotyrosine and diiodotyrosine as well as thyroxine were identified in the serum of one of the patients, and the iodotyrosyl compounds in the urine of both.

It is postulated that the thyroid enlargement and hypothyroidism are due to the loss of these hormone precursors from the thyroid gland. Their loss is more likely to be due to deficiency of the enzyme dehalogenase than to difficulty with the oxidative coupling of two molecules of diiodotyrosine.

Whatever the enzyme defect in this family it is genetically determined.

Our thanks are due to Dr. J. B. Stanbury for his interest in this work, and the advice and information he has given freely from his own experience of similar patients; to Mrs. R. Pitt-Rivers, F.R.S., for her opinion on the chromatograms and her suggestions for improvements in technique; to the Western Regional Physics Department, Glasgow, who supplied the ^{131}I; to the Rankin Fund, Glasgow University, and the Board of Management, Glasgow Royal Infirmary, for defraying the cost of the ^{131}I studies.

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". . . Behind some modern writing there lies a complex intellectualism which over-emphasises the scientific side of medicine, and minimises clinical and human values. In despair of understanding disease, our new scientific physicians find refuge inside an obsession with exact knowledge. In this are we repeating the errors of previous ages? Ancient Greek philosophers stultified themselves in proving logically that the hare cannot run as fast as the tortoise. Mediaeval Schoolmen speculated how many angels could dance on the point of a needle. Our bio-chemical subdivisions, our mathematics of medicine—do these not often divide the human organism into more fractions than is necessary, thus repeating mistakes of Greeks and Schoolmen, though different mistakes? Medicine can never be an abstract science, and it should not attempt to become so. Medical 'literature' of this sort may be in reality the symptom of an intellectual malaise."—*N.A.P.T. Bulletin*, October, 1956.

DANGEROUS CONTAMINANTS IN STORED BLOOD

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THE hazards of blood-transfusion have often been described (Whitby 1942, James 1954, Zeitlin 1956), but many people still tend to minimise the risks or to remain unconvinced of their reality. Reactions following transfusion are much less common than they were, but the possibility that a patient may receive infected blood still remains one of the more serious and least appreciated of the many dangers. The presence of small numbers of bacteria which cannot multiply during storage is possibly common, but such organisms seldom if ever give rise to reactions. Bacteria which grow readily in the refrigerator are important because they make blood lethal even in small doses. We know little about the incidence of such contamination, but it is important to recognise these organisms and the reactions which they cause.

In the British literature for the past ten to twelve years I have found only three reports of such fatal reactions caused by contaminated blood :

Mollison (1951) describes a shock-like syndrome which developed rapidly after the transfusion of a small volume of infected blood ; and the two other cases are reports of coroners' inquests (*British Medical Journal* 1952, 1954).

Several cases are reported in the American literature for the same period :

Borden and Hall (1951) described two deaths resulting from the transfusion of blood contaminated with cold-growing gram-negative bacilli.

Pittman (1953) studied the common contaminants of blood and blood products and found that gram-negative bacilli were almost exclusively responsible for severe and fatal reactions. The organisms isolated from eighteen such reactions belonged to three main groups—pseudomonas, *Paracolobacterium intermedium*, and *Escherichia freundii*. Micrococci, diphtheroids, and staphylococci were quite commonly found but never reached a high count and were never implicated in severe reactions.

Stevens et al. (1953) reported a fatality due to blood contaminated with a pseudomonas. These workers also give details of forty other cases, many previously unpublished, and these confirm Pittman's observations on the importance of gram-negative bacilli. It appears that the reaction depends on the presence of a sufficiently large number of bacteria and not on the type of organism.

Braude et al. (1953) successfully treated a patient with acute circulatory failure of the "infected transfusion" type with noradrenaline.

Such severe reactions may be uncommon in this country, but they are probably not so rare as examination of the literature suggests. There may have been other cases which were not published owing to an understandable reluctance to publicise such unfortunate accidents.

Case-reports

The following brief notes of two fatal transfusion reactions illustrate the danger and may help to prevent further accidents or at least suggest the need for prompt treatment.

Case 1.—A man, admitted with hæmatemesis, was given five bottles of blood without mishap. Soon after the sixth bottle was started he became restless and developed rigors. The transfusion was stopped, about 20 ml. having been given. The patient developed acute circulatory failure and died two hours later. There was no necropsy.

Case 2.—A patient, admitted with a suspected duodenal ulcer, was found to have a very low hæmoglobin level. Two bottles of blood had been given when, after about 50 ml. from a third bottle, the patient had a rigor and became noisy and violent. The transfusion was stopped. The patient subsequently developed progressive cyanosis and hypotension and died within twelve hours. At necropsy a unilateral suprarenal hæmorrhage and some submucosal petechiæ in his ileum were found. There were no very characteristic lesions to account for death.

Bacteriological Findings

The suspected bottles of blood, both of which had been at room-temperature for some hours, were sent to the laboratory for examination.

The blood from case 1 was fifteen days old, and that from the second three weeks old ; both were very dark and of a "permanganate" colour, but there was no obvious hæmolysis. The blood smelled sour. Stained films showed very large numbers of gram-negative bacilli (fig. 1). The same organism was present in both bottles. It grew well on simple media at a temperature range from 4°C to 30°C, the latter being the optimal temperature. There was no growth at 37°C. Details of the cultural characteristics are as follows :

Short stout gram-negative rods, motile by means of peritrichate flagella. Greyish-white, low, convex, semitranslucent colonies on agar. Gelatine stroke culture, slightly spreading growth with undulate edge, slow liquefaction. Slow acidification and clot in litmus milk. Acid and gas produced from mannitol, glucose, sucrose, lactose, salicin, dulcitol, xylose, arabinose, maltose, dextrin, fructose, galactose, raffinose, and trehalose. Late production of gas from inulin, rhamnose, and glycerol. Dulcitol was slowly fermented at 4°C and at 21°C but not at 30°C. No change was produced in inositol, sorbitol, or adonitol. Urea slowly split, indole negative, M.R. –ve, V.P. –ve, Koser's citrate +ve, reduces nitrates, catalase +ve, H_2S –ve, methylene-blue reduced. Non-hæmolytic facultative anaerobe. The organism was identified as a member of the klebsiella-aerobacter group. Cultures were sent to Dr. S. T. Cowan, who made further investigations with the following results : KCN –ve, lysine, arginine, ornithine, and histidine decarboxylases all negative (Møller's method), gluconate –ve, malonate +ve. The organism resembles but is not identical with *Klebsiella cloacæ*.

Experimental Results

Source of Contamination

Contamination may be due either to some failure to sterilise the taking equipment or to infection when the blood is taken. The source of infection was not found ; but, when the blood-taking equipment was checked, bacteria were found in the fluid used to preserve plastic bottle-caps. A new tin of caps was opened and the fluid sampled. Stained films again showed gram-negative bacilli. The fluid was cultured, and the following organisms were isolated : an aerobic spore-bearer of the subtilis type and a gram-negative bacillus which on further examination proved to be an achromobacter. Neither organism grew at 4°C. This suggested a possible route of contamination because bacteria on the caps might pass through the perforations in the rubber liners, the chances of this happening being increased by the simultaneous shrinking of the cap and cooling of the blood during the return journey from a bleeding session.

The cap fluid was tested against the organism isolated from the blood to see if there was any antibacterial effect. The fluid was bactericidal at 1 : 2 and bacteriostatic at 1 : 5. The instructions on the tin particularly warn against diluting the fluid but give no reason why this should not be done. There is no claim that the caps are sterile, nor that the fluid is bactericidal.

Since the caps are infected they must be sterilised before use. This can best be done in the autoclave, as the caps will tolerate a pressure of 15 lb. for 60 minutes without damage.

Growth of contaminant at 4°C.—Two "short volume" bottles of blood, taken on the same day, were infected experimentally. The first bottle was infected within twenty-four hours of taking and the second eight days after taking. This was done to see if fresh blood was more inhibitory than blood a week old, but no such difference was detected. The infecting dose was estimated to give an initial count of 1 or 2 organisms per ml. of whole blood. A similar inoculum was put into

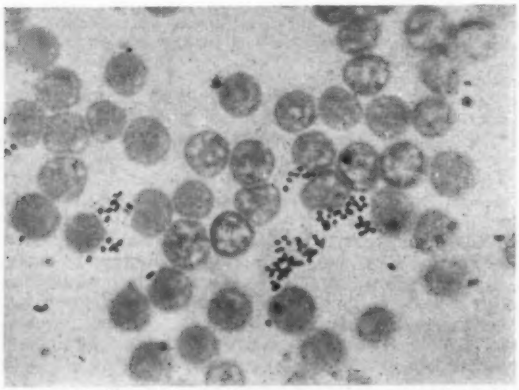

Fig. 1—Thin film of blood with contaminant gram-negative bacilli. (Giemsa. × 1000.)

broth to determine the comparative rate of growth in a normal bacteriological medium. So far as possible, samples were taken daily, each bottle being mixed well before sampling and returned to the refrigerator immediately afterwards. A second bottle of broth, which received the same inoculum, was left completely undisturbed until the tenth day. A sample taken then showed a total population five generations less than the corresponding test sample. Thus it appears that frequent mixing increases the rate of growth slightly, and that undisturbed bottles of blood would take a little longer to reach the same bacterial population as those sampled daily. Since the total volume was less, the blood in the test bottles also had a higher concentration of anticoagulant than normal. To make a complete study of this problem many bottles of blood would be required. Viable counts in triplicate made from poured plates generally showed good agreement. By the third week it was difficult to obtain consistent counts, owing to the presence of clumps of bacteria, and after twenty-one days counts were abandoned.

Bacteria were more easily demonstrated in the original bottles by thick films stained and lysed in 0·1% watery methylene-blue. Such films must be allowed to drain and dry without blotting, as in staining with Field's stain. Thick films from the experimentally infected blood were examined daily, but no organisms were seen until the count reached 5000–10,000 per ml. This was not until the eighth or ninth day of growth. The colour of the blood remained good for from fifteen to seventeen days. The colour changed in each bottle when the bacterial population reached 100 million per ml., a count which was reached two days earlier in fresh blood. The colour change, which was not associated with any significant hæmolysis, suggested reduced hæmoglobin, and this was confirmed both by observing the effect of oxygenation and by spectroscopy. There was a close correlation between the colour change and the fall in the level of blood (anticoagulant) glucose, which showed very little change until the third week, when it fell relatively sharply. Although the organism produced gas well at 4°C in peptone water sugars, there was no evidence of gas-bubbles in the infected blood until after the colour had changed. Perhaps carbon dioxide, produced by the breakdown of glucose, is taken up by the red cells until all the hæmoglobin is reduced.

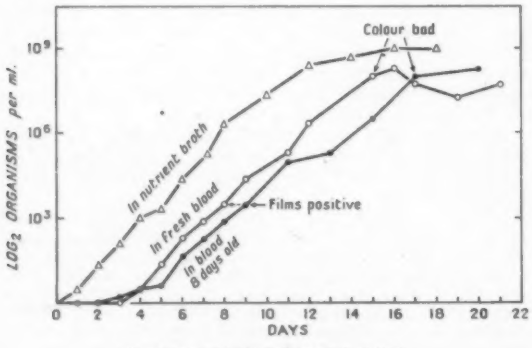

Fig. 2—Growth of contaminant at 4°C.

Fig. 2 shows the results of the foregoing experiments. The counts were plotted as logarithms to the base 2 (Finney et al. 1955) so that the rate of growth in generations could be clearly seen.

The three cultures show the same generation time of eight hours. There is a striking difference in the lag period of the organism growing in blood compared with that in broth. This may be due to some inhibitory action of the blood or may simply mean that blood plus anti-coagulant is a poor culture medium. Reissman (1942) investigated the growth of many organisms in stored blood but did not comment on the lag period.

The growth curves in blood show a stationary phase which begins in the third week, but this may be complicated by a change to anaerobic growth once the blood is fully reduced.

Discussion

Two fatal transfusion reactions occurred because blood was contaminated with an organism which grew at 4°C. Both bottles of blood were in the third week of storage when issued; hence there had been ample time for a high bacterial count to be reached. Possibly more bottles were contaminated but were issued before the number of bacteria had reached a dangerous level. If all gram-negative contaminants show the same rate of growth as the one examined, dangerous numbers will seldom be present before the third week. A possible solution therefore lies in reducing the "life" of bank blood from three to two weeks, or in not issuing blood during the third week until a stained film has been examined and found to be free from bacteria. Such a solution would be possible if this were simply a bacteriological problem. In blood-transfusion practice, however, supplies may not permit a shorter life than three weeks. Although the annual incidence of "infected transfusion" deaths is unknown, it is possible that such a policy might save a few lives each year. It is true that, as a bottle of infected blood reaches room-temperature, the growth of any bacteria present will be very much more rapid; so there is always a potential danger if blood is contaminated.

Some of these fatal cases are particularly tragic in that death followed transfusions for which the indications were slender. The total annual mortality from transfusion accidents of all types can only be guessed, but Zeitlin (1956) estimates that there are two hundred deaths a year from all causes. If this is true, it is surely time we revised our opinions on when to transfuse. A reduction in the total number of transfusions would not only reduce the number of patients at risk but would also help the transfusion service to shorten the maximal period of storage.

The final responsibility for any bottle of blood lies with whoever sets up the transfusion. Apart from mixing at the time of taking, bank blood is not deliberately shaken up again until immediately before giving, and no-one else may have as good an opportunity to judge the fitness of any particular bottle.

If a transfusion reaction of the severe type occurs, prompt treatment may be life-saving. Treatment should correct the acute peripheral circulatory failure which develops. Thus the administration of noradrenaline and plasma to maintain the blood-pressure and combat the acute shock might be considered.

The two fatal cases reported here showed typical clinical features although the infecting organism was unable to grow at all at body-temperature. It is there-

fore unlikely that the multiplication of bacteria in the body plays any major part in these reactions, and certainly in the recorded British cases antibiotics had no effect whatsoever on the clinical course.

Probably the best and quickest way to distinguish these severe reactions from other less dangerous ones is by examining stained films of the suspected blood. If a transfusion accident is suspected, any remaining blood should be examined without delay. In this way the diagnosis can be confirmed and energetic and life-saving treatment started in time.

Summary

Certain gram-negative bacilli can grow in stored blood at refrigerator temperature. If the blood is stored long enough, the organisms reach a high count. Such blood, in amounts as small as 20 ml., may produce a fatal shock-like syndrome.

Two cases of this type, due to contamination with a klebsiella-like organism, are briefly described.

Studies on the growth of this organism in blood stored at 4°C show that, after a lag period of three or four days, logarithmic growth takes place at the rate of about three divisions in twenty-four hours. Thus even infected blood is unlikely to be dangerous until the third week of storage. The risk of severe reactions of the "infection" type could be very greatly reduced if, before any blood in its third week of storage is issued, a stained film is examined to exclude the presence of bacteria.

Stained films of any blood which causes a severe reaction should be examined at once. If the blood is infected, the patient must be treated without delay, because prompt treatment may be life-saving.

I wish to thank numerous colleagues who helped in this investigation.

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AMINO-ACIDS AND KWASHIORKOR*

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KWASHIORKOR is a major public-health problem in underdeveloped countries throughout the world. More specific definition of the nature of the deficiency that gives rise to the syndrome is highly desirable, if national and other programmes for prevention and treatment are to be effective and economically feasible. The supply of good-quality protein foods, such as milk, to the regions where kwashiorkor is prevalent is not always practicable, on the grounds of expense, distribution, storage, and local feeding-customs. Alternative sources of protein produced locally or able to be imported cheaply must be found to supplement basic foodstuffs such as rice and maize. It therefore becomes necessary to determine which are the essential limiting nutrients in the diets that produce kwashiorkor. Do these children need only the extra nitrogen or extra amino-acids that protein foods supply, or do they need also the extra vitamins, mineral salts, fat, and other accessory factors that are part of these foods? We have sought information on these questions by means of the therapeutic trial, using certain purified and synthetic diets based initially on the constituent nutrients of skimmed milk. It has been demonstrated that this method can be used under reasonably well-controlled conditions to test for the presence or absence of curative substances in a formula (Brock et al. 1955, 1956, Pretorius et al. 1956).

In this paper we report the effects of feeding synthetic amino-acids to children with kwashiorkor. It is the logical extension of work already published which showed that vitamin-free casein, water, glucose, and a salt mixture could initiate cure of this syndrome (Brock et al. 1955).

Criteria of Response to Therapeutic Test

A therapeutic trial involves the application of strict criteria of response to the test formulæ. These criteria have been laid down in full (Brock et al. 1955) and can be summarised by the term "initiation of cure." By "initiation of cure" we mean that within 10–21 days the downward course of the disease is reversed; the skin lesions are healed or healing, the œdema has subsided completely, and there has been a definite improvement in mentality and appetite. Objectively there has been a significant rise in the serum-albumin level. Further experience with this test of initiation of cure has shown that it usually gives a clear-cut answer as to the efficacy of a formula. Difficulties involved in therapeutic trials in sick infants must necessarily be taken into account. The case-material is by no means homogeneous, because criteria of severity are ill defined, electrolyte disturbance is variable (Hansen 1956), and infections are often present which retard or prevent recovery. Failure to respond, or a partial response only, might be due to these complicating factors rather than to a deficiency of the formula itself. A trial therefore requires a large number of cases to afford statistical comparison of one formula with another. With synthetic formulæ this was usually impossible, because of the expense and unavailability of amino-acids. We have therefore used an alternative approach of testing formulæ on small groups of cases and checking the results by nitrogen balance. Nitrogen balance has been used in the determination of essential amino-acid requirements of both adults and infants (Rose 1949, Holt 1956).

Case-material and Methods

Criteria of selection of cases and methods were identical with those described previously (Brock et al 1955, Pretorius et al. 1956). The composition of the test feeds is shown in table I. The first formula contained 18 amino-acids (based on the amino-acid content of casein), which together formed 59% (dry weight) of the feed. The vitamin mixture contained all the known vitamins. This formula is isocaloric with dried skimmed milk, and the average daily dose of 100 g. gave an amino-acid intake greatly in excess of estimated minimal requirements of adults (Rose 1949). The second amino-acid formula contained 11 amino-acids—the 8 essential amino-acids plus 3 others. Arginine and histidine were added because it is not known whether these are essential for children. Tyrosine was added to spare phenylalanine. The amino-acids in this formula made up only 16% (dry weight) of

* Presented at the Eighth International Congress of Pædiatrics, Copenhagen, July, 1956.

TABLE I—PERCENTAGE COMPOSITION OF AMINO-ACID FORMULÆ

L-Arginine	.. ..	1·95	
L-Histidine	.. ..	1·30	
DL-Isoleucine	.. ..	5·70	
L-Leucine	.. ..	4·20	
L-Lysine	.. ..	4·15	
DL-Methionine	.. ..	1·20	
DL-Phenylalanine	.. ..	3·00	
DL-Threonine	.. ..	3·60	
DL-Tryptophane	.. ..	1·14	
DL-Valine	.. ..	5·30	
DL-Aspartic Acid	.. ..	6·10	
L-Glutamic Acid	.. ..	8·20	
Glycine	.. ..	0·80	
DL-Alanine	.. ..	3·00	
DL-Serine	.. ..	3·30	
L-Tyrosine	.. ..	2·30	
L-Cystine	.. ..	0·38	
L-Proline	.. ..	3·80	
18 Amino-acids	.. ..	59·5	
Glucose	.. ..	30·7	
Salt mixture	.. ..	9·6	
Vitamins	.. ..	0·2	

L-Arginine	.. ..	1·24
L-Histidine	.. ..	0·70
L-Isoleucine	.. ..	1·44
L-Leucine	.. ..	1·62
L-Lysine	.. ..	2·02
DL-Methionine	.. ..	0·70
DL-Phenylalanine	.. ..	2·75
DL-Threonine	.. ..	1·45
DL-Tryptophane	.. ..	0·50
L-Tyrosine	.. ..	2·57
DL-Valine	.. ..	1·01
11 Amino-acids	.. ..	16·0
Glucose	.. ..	74·0
Salt mixture	.. ..	9·6
Vitamins	.. ..	0·2

the feed. The average daily quantity of this formula was again 100 g. Somewhat arbitrary figures were selected for individual amino-acids, based on available information on infant requirements. Where the DL amino-acids had to be used, the quantities were doubled. As the result of a typographical error the intended figures for valine and tyrosine were transposed. The vitamin and mineral supplements were the same as with the 18-amino-acid formula.

Both these amino-acid formulæ were further tested without the vitamin supplement. The formulæ were dissolved in water and administered by bottle or cup.

The nitrogen balance studies were carried out for periods of 3–7 days on male patients. The balance methods used are described elsewhere (Hansen 1956). Nitrogen was estimated by micro-Kjeldahl. Serum-protein levels were estimated weekly by a biuret method. The test patients were all aged 1–2 years and weighed 5–8 kg. No patient before the introduction of amino-acid formulæ had received parenteral or dietary therapy apart from the oral administration of electrolyte and glucose solution. The balance periods started simultaneously with the first amino-acid feed and therefore represent the initial phase of nitrogen feeding.

Most of the children had to be tube-fed on the first day of the amino-acid formula. Later, however, they took the feeds well in spite of the unpleasant flavour. There was very little vomiting, but a watery diarrhœa was a constant finding. This could be partially controlled by 'Celluflour' when severe.

Results

Clinical

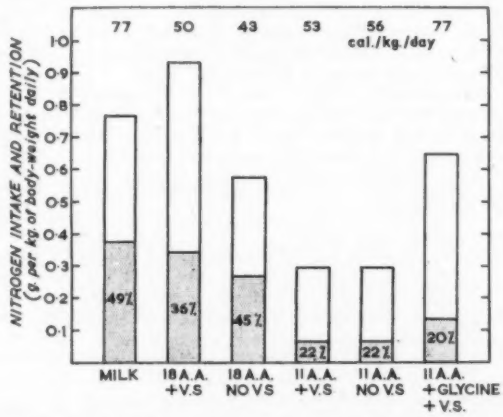
Table II shows three groups of response to the test formulæ. In the first group are the cases showing initiation of cure as already defined. The second group represents those cases which gave a partial response only to the formula. This means that there was improvement of general condition, healing of skin lesions, lessening of œdema, and some rise in serum-albumin: however, anorexia, apathy, irritability, severe diarrhœa, or some complicating infection was still present to a variable extent at the end of the test period. In the third group are those cases in which there was no response at all.

In general our experience indicates that, if there is no recognisable response to a test formula within ten days, the trial should be discontinued in favour of more active conventional therapy. The formula containing 18 amino-acids with vitamins showed an initiation-of-cure rate of 56%—a figure comparable to that achieved with skimmed milk (Brock et al. 1955). Without the vitamins the results were much poorer, initiation of cure being achieved in only 33%. Secondary infection and severe anorexia accounted for this low figure. It is nevertheless remarkable that in three cases initiation of cure was possible with this vitamin-free synthetic formula. This included complete healing of skin lesions. Even in those cases which were classified as a partial response there was considerable improvement in the skin.

The formula with the 11 amino-acids combined with vitamins gave a good response. Without the vitamins we were unable to attain initiation of cure in a single case, again because of the onset of severe anorexia after about 7–10 days and a high rate of secondary infection. Nevertheless there was remarkable improvement of skin lesions and loss of œdema in some cases on this vitamin-free formula.

TABLE II—CLINICAL RESULTS AND RISE OF SERUM-ALBUMIN LEVEL IN KWASHIORKOR TREATED BY AMINO-ACID FEEDING

Formula	No. of cases	Initiation of cure	Partial response	No response	Mean rise of serum-albumin (g. per 100 ml.)
18 Amino-acids (59%) + vitamins	9	5	3	1	1·72 ($p < 0·01$)
18 Amino-acids (59%) without any vitamin	9	3	4	2	1·12 ($p < 0·02$)
11 Amino-acids (16%) + vitamins	8	4	3	1	0·93 ($p < 0·01$)
11 Amino-acids (16%) without any vitamin	7	0	5	2	0·60 ($p < 0·05$)



Intake and retention of nitrogen on amino-acid formulæ: A.A., amino-acid; V.S., vitamin supplement. Values are averages of 2 cases except histograms 3 and 6, which represent single cases. Height of histogram represents intake, and hatched area retention. (cf. table III.)

The mean rise of serum-albumin was significant with all four test formulæ although not so highly significant in the cases treated without vitamins. This coincides with the clinical results.

Nitrogen Balances

These are summarised in the accompanying figure, and details of individual balances are given in table III. It will be seen that the 18-amino-acid formulæ, both with and without vitamins, produced nitrogen retention comparable to that of skimmed milk. There is a smaller average retention of nitrogen with the 11-amino-acid formulæ. As this could have been the effect of a smaller nitrogen intake, one child was given glycine to make its intake isonitrogenous with the skimmed milk and 18-amino-acid formulæ. This led to a higher total retention of nitrogen, but the percentage retention still remained low.

Discussion

The results must be interpreted and discussed with caution in the face of the difficulties already mentioned and the small number of cases used in the trials.

TABLE III—NITROGEN BALANCES

Formula	Case no.	Nitrogen intake (g. per kg. daily)	Percentage absorption	Nitrogen retention (g. per kg. daily)	Nitrogen retention (%)	Balance period (days)
18 A.A.	1	0·88	81	0·284	32	7
+vitamins	2	0·955	77	0·374	38	6
18 A.A. no vitamins	3	0·571	85	0·26	45	7
11 A.A.	4	0·31	69	0·049	15	3
+vitamins	5	0·257	74	0·073	28	4
11 A.A.	6	0·311	75	0·087	28	5
no vitamins	7	0·245	75	0·033	14	3
Half-cream milk	8	0·62	84	0·311	50	7*
	9	0·896	80	0·434	48·4	10
11 A.A. +vitamins +glycine	4	0·64	71	0·131	20	3

*Data obtained in balance studies reported elsewhere (Hansen 1956).

We have shown that, when combined with water, minerals, and glucose, synthetic amino-acids can initiate cure of kwashiorkor. This can happen in the absence of vitamins and is in keeping with our previous findings (Brock et al. 1955) (1) that so-called "vitamin-free" casein was effective and (2) that no unknown factor is necessary for initiation of cure of the syndrome. It seems reasonable to deduce that the chief limiting nutrients in the low-protein diets that produce kwashiorkor are the amino-acids. We do not at present know whether the limitation is set only by absolute deficiency of amino-acids or whether it may be accentuated by amino-acid imbalance (Elvehjem and Harper 1955).

Comparison of the vitamin-free and vitamin-containing formulæ shows that vitamins, though not necessary for initiation of cure with amino-acid formulæ, improve the clinical results. We were impressed also by the high incidence of infective complications and of anorexia on the vitamin-free formulæ.

Analysis of differences in the nitrogen balances observed with 18-amino-acid and 11-amino-acid formulæ is complicated by: (1) disparity in total nitrogen intake and amino-acid/carbohydrate ratio; (2) difference in intake of individual amino-acids and their relative ratio; and (3) low values for valine in the 11-amino-acid mixture. It is apparent that these variables must be adjusted and standardised in future studies to allow of comparisons between mixtures of amino-acids.

The results nevertheless show that the 11-amino-acid formula gave a consistently lower nitrogen retention than the 18-amino-acid formula. The percentage retention was not improved in one case when a non-essential source of nitrogen (glycine) was added to bring the total nitrogen intake into line with that of the 18-amino-acid formula.

In healthy adults (Rose et al. 1954) 8 essential amino-acids with added glycine gave as good a positive nitrogen balance as 18 amino-acids. There are no comparable data on healthy children. Our limited observations here must await amplification before they can be adequately interpreted.

Our nitrogen-balance data are not comparable with those of others obtained on kwashiorkor patients (Holemans and Lambrechts 1955, Gomez et al. 1956, Robinson et al. 1956) because these workers were using natural foodstuffs. Nevertheless it is significant that retention of nitrogen with the 18-amino-acid formula compares so favourably with that of milk-treated cases in our own series and in the cited reports. In making comparisons one must allow for the presence or absence of diarrhœa and the time of the balance period after commencement of treatment.

These preliminary investigations emphasise the fact that much further work needs to be done to elucidate the quantitative and qualitative aspects of amino-acid requirements and imbalances in the cure and prevention of kwashiorkor (protein malnutrition). The practical application of such knowledge will be by no means simple. The choice of natural foodstuffs or of synthetic food supplements will be made easier by more precise knowledge of the amino-acid requirements of these children.

Summary

Results of a therapeutic trial of synthetic amino-acid mixtures in kwashiorkor are reported. Given with glucose, minerals, and vitamins, mixtures of 18 or 11 amino-acids will initiate cure.

Even in the absence of a vitamin supplement, both mixtures produced healing of skin lesions, loss of œdema, and regeneration of serum-albumin level.

In a few cases full "initiation of cure" took place with the vitamin-free 18-amino-acid mixture.

It is concluded that amino-acids are the chief limiting nutrients of the diets on which kwashiorkor develops. But much further work remains to be done on the qualitative and quantitative aspects of amino-acid deficiency or imbalance in this disease.

This work was done in the pædiatric wards of Groote Schuur Hospital and the Clinical Nutrition Research Unit of the South African Council for Scientific and Industrial Research in the University of Cape Town.

We wish to thank the Williams-Waterman Fund for the Combat of Dietary Diseases, Research Corporation, New York, for financial assistance; Merck & Co., Inc., Rahway, New Jersey, for providing the amino-acids; the South African Council for Scientific and Industrial Research for financial assistance; Prof. F. J. Ford and the Medical Superintendent of Groote Schuur Hospital for facilities; Miss V. Jenkinson and Miss C. Freesemann, for technical assistance; and Sister N. Nagle and the nurses for their coöperation.

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CHLORHEXIDINE IN UROLOGY

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To prevent post-cystoscopy cystitis—so-called catheter fever—antibacterial agents are often incorporated in the medium used for cystoscopy. Antibiotics used in this way are of little value because the infecting organism is often *Pseudomonas pyocyanea*, which is sensitive only to polymyxin or perhaps a mixture of 'Supronal' and oxytetracycline; moreover, in the opinion of most authorities, antibiotics should be reserved for therapy. Until recently we used physiological saline solution as our cystoscopy medium, but after a period in which the incidence of infection following cystoscopy was particularly high we changed to chlorhexidine.

Chlorhexidine ('Hibitane') seemed very suitable for use in genito-urinary work because its antibacterial spectrum covers all the organisms likely to be encountered. The compound was first described by Davies et al. (1954), and their figures for bacteriostasis in heart-brain infusion, confirmed in general by ourselves, are as follows: proteus 1 : 1,000,000; *Ps. pyocyanea* 1 : 100,000; klebsiella 1 : 100,000; *Escherichia coli* 1 : 100,000;

Staphylococcus aureus 1 : 1,000,000 ; and *Mycobacterium tuberculosis* 1 : 2,000,000.

The oral and local toxicity of chlorhexidine is extremely low ; and we have confirmed that, in the concentrations used by us, chlorhexidine does not irritate the mucosa. In the presence of blood and protein chlorhexidine compares favourably with other antiseptics in common use ; Calman and Murray (1956), after a comparative investigation, recommend it as the antiseptic of choice for use in midwifery. Its activity is decreased considerably by pus, and it is probably of little value in the treatment of an established infection.

Materials and Method

Before using chlorhexidine we checked our previous procedure in detail. The irrigating fluid (0·9% sodium-chloride solution), the fluid for external disinfection (1% 'Desogen'), and the disinfecting fluid for the cystoscope (phenylmercuric nitrate 1 : 3000) were examined bacteriologically at regular intervals and found to be sterile except on one occasion, when the irrigating fluid grew *Ps. pyocyanea*.

The urine of 50 consecutive patients attending as outpatients was examined before cystoscopy and again 3–5 days afterwards. Then chlorhexidine was introduced, and the next 50 patients were investigated in a similar manner. For technical reasons it was impossible to make this trial with chlorhexidine in alternate cases, every second case being used as a control.

Chlorhexidine was used in the following way. The rinsing fluid for the irrigator consisted of a 1 : 10,000 solution of chlorhexidine (1 g. in 10 litres of tap-water at ± 40°C). For bladder irrigation and as the cystoscopy medium the concentration was 1 : 5000, and for disinfecting the external genitalia 1 : 1000. The tap of the irrigator tube and the sliding switch for the light were immersed between cystoscopies in a 1% solution of chlorhexidine in 70% alcohol.

Finally, the hands of the staff were rubbed with a cream containing ½% chlorhexidine dihydrochloride several times a day. The cream was prepared in collaboration with our pharmacist, Mr. A. E. Altmann, to give optimal diffusion on agar. With a 10 mm. hole in broth-agar sown with *Ps. pyocyanea* an inhibitory zone 16 mm. in diameter was obtained. The composition of the cream was 130·5 g. of 'Massupol,' 34·8 g. of glyceryl monostearate, 130·5 g. of cetyl alcohol, 4 ml. of 'Tween 20,' 1·5 g. of methyl hydroxybenzoate, 5 g. of chlorhexidine dihydrochloride ; 2·5 g. of Na_2HPO_4, $2H_2O$, to a litre of distilled water. ('Hibitane Antiseptic Cream,' as sold by the manufacturers, is designed for similar use.)

Results

Before the introduction of chlorhexidine 70% of the urine samples became infected (56% *Ps. pyocyanea*, 10% proteus, 4% *Staph. albus*).

After the introduction of chlorhexidine only 8% became infected, all with *Staph. albus*.

Comments

It is unfortunate that technical difficulties prevented us from making a properly controlled trial on alternate cases, for the fluctuating incidence of infection in cystoscopy clinics is well known. Nevertheless, the immediate reduction of pyocyaneus and proteus infections to zero after the introduction of chlorhexidine was most impressive, and it seemed unlikely that it could have been entirely due to other factors. Since our trial was completed we have continued to use chlorhexidine, and the low infection-rate has been maintained. We therefore strongly recommend chlorhexidine as a urological disinfectant.

Summary

Chlorhexidine was investigated as a disinfectant for use in urological outpatients. During a particularly bad period the urinary infection-rate in 50 consecutive patients was 70% (56% *Ps. pyocyanea*, 10% proteus, 4% *Staph. albus*). In the next 50 patients cystoscoped after the introduction of chlorhexidine the infection-rate fell to 8% (all *Staph. albus*).

Chlorhexidine is of great value as a urological disinfectant.

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TELANGIECTASIA IN RAYNAUD'S DISEASE

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TELANGIECTASIS usually denotes small vascular lesions consisting of dilated capillaries, venules, or arterioles in the skin or mucosæ. Four main types are generally recognised : (1) simple telangiectases involving capillaries and small venules may follow exposure to sun and wind, X-irradiation, and various skin diseases ; (2) spider angiomata consist of a leash of vènules draining a central dilated arteriole ; (3) Campbell de Morgan spots involve only capillaries ; and (4) in multiple hereditary hæmorrhagic telangiectasia thin-walled capillaries, which bleed easily, develop beneath the skin and mucosæ of the nose and gut.

The telangiectases described here were observed in long-standing Raynaud's disease. Similar lesions are not mentioned by Hunt (1936) and Allen et al. (1955) ; but probably they were noted by Ormsby (1912), who described telangiectasia of the hands and face associated with Raynaud's disease in two patients, and by Parrisius (1921), whose drawings of telangiectases closely resemble those to be described. The distinctive feature of such lesions in Raynaud's disease, however, is neither their macroscopic nor their microscopic appearance but their response to stimulation ; this apparently has not been described before.

Methods

The blood-vessels were observed after the skin had been cleared with liquid paraffin. A binocular dissecting microscope with a graduated eye-piece was used, the skin being illuminated by a heat-filtered lamp. The effect of drugs was studied in the manner described by Lewis (1927). A suitable spot in the area under observation was first selected, and the point of a fine needle was placed on it. The needle point was gently pushed through until it penetrated the epidermis. It was then withdrawn, the paraffin was wiped off, and a drop of the drug whose effect was to be studied was placed on the hole. In all

CLINICAL DATA

Case no.	Sex	Age (yr.)	Duration of Raynaud's disease (yr.)	Duration of acrosclerosis (yr.)	Superficial necrosis	Calcinosis	Sites of telangiectases					
							Forehead	Nose	Cheeks	Lips	Hands	Forearms
1	F	29	10	3–4	—	+	+	+	—	+	—	—
2	F	55	40	20	+	+	—	—	—	+	+	—
3	F	53	10	3–4	—	—	+	—	—	+	+	—
4	F	45	30	..	—	1 year	+	+	—	+	+	—
5	F	66	"Many"	2	+	—	—	—	—	+	—	—
6	F	64	15	..	+	—	+	+	+	+	+	+
7	F	45	30	4	—	—	+	—	+	+	—	—
8	F	44	30	5–6	+	—	+	—	—	+	+	—
9	F	45	35	5	+	—	+	+	+	+	+	+

the experiments adrenaline was used in 1/1000 aqueous solution, and histamine in freshly prepared 1/3000 aqueous solution. The observations were abandoned on the two occasions when the pricks bled.

Fig. 1—Multiple telangiectases on face of case 6. This patient showed multiple lesions on face, hands, and lower parts of forearms.

Observations

Nine women were studied in whom Raynaud's disease had been present for more than ten years. All had telangiectases. Seven had secondary thickening of the skin of the fingers (acrosclerosis), and in five there had been superficial necrosis of the skin of the finger-tips. Two had subcutaneous deposits of calcium in the fingers (see table). No patient showed evidence of generalised scleroderma.

Naked-eye Appearance

The telangiectases consisted of dilated vessels covering irregular areas ranging in size from about 0·5 mm. square to 8 mm. square. The colour varied with skin-temperature, changing from blue when cold to bright red when the skin was hot. Careful naked-eye inspection revealed no central arteriole, and all the lesions were macular. Occasionally only a single vessel was involved. The lesions were constantly present on the lips, where they might extend from mucosa to circumoral skin without any change in character at the junction. In six cases the hands were involved, palmar and dorsal skin being equally affected. The lesions were common on the forehead, less common on nose and cheeks, and rare on the forearms (see table). Light sustained pressure easily blanched lesions on the lips, face, and dorsum of the hand, but those beneath palmar skin required firm pressure. The naked-eye appearances are shown in figs. 1–3.

Microscopical Appearance

Viewed under low-power magnification a typical lesion (fig. 4*a*) consisted of a complex network of vessels, varying in size up to about 0·12 mm. in diameter. Most of the dilated vessels communicated with each other, but in the area of the lesion isolated short lengths of dilated vessel were also present. To one side of this lesion a group of dilated capillary loops was visible.

Under higher magnification the vessels were seen to be dilated venules of the subpapillary venous plexus (fig. 4*b*). Blood was flowing rather slowly through the network from one side to the other. In some areas dilated capillary loops were visible. They were better seen in the nail fold, where they appeared in some cases as bright-red specks just visible to the naked eye (fig. 5).

Reaction to Stimulation

Light touch on the skin overlying a telangiectatic area caused an immediate dilatation of the abnormal vessels, and previously invisible venules and capillary loops appeared, often connecting previously isolated lengths of venule to the main network (fig. 6). The increase in diameter of vessels which had been visible initially lasted only a few seconds, but vessels which became visible in response to touch might remain so indefinitely. When the edge of a lesion was touched, the telangiectasis might extend ; or an isolated length of dilated venule previously separated from the main area might become joined by an extension of the lesion. Stimulation of normal areas of skin, however, did not reveal previously unsuspected lesions.

Adrenaline introduced through a prick caused profound vasoconstriction, an area of blanching spreading out with disappearance of both capillary loops and venules (fig. 6). When the adrenaline was wiped off and paraffin was substituted, the venules gradually dilated again during about five minutes, but not all the vessels previously noted might reappear. This reaction was obtained in lesions in the hand when the circulation was cut off by a pneumatic cuff as well as in lesions with intact circulation, indicating that active vasoconstriction was taking place (Lewis 1926).

Fig. 3—Lesions on upper lip of case 2.

Histamine introduced in the same way caused slight dilatation of the vessels and the appearance of previously unseen venules and capillary loops. The weal that developed appeared less obvious in the area of the telangiectasis.

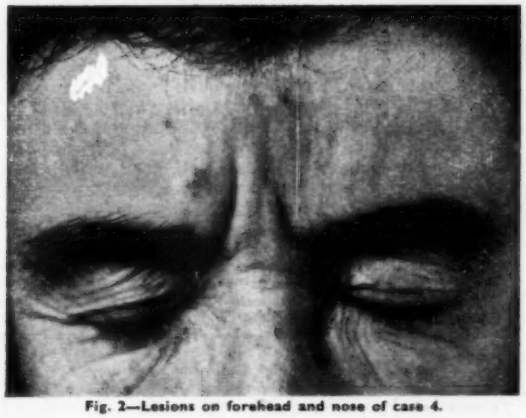

Fig. 2—Lesions on forehead and nose of case 4.

Discussion

Differentiation from Other Telangiectases

The telangiectases seen in Raynaud's disease are similar in size and shape to spider nævi described by Bean (1945). They differ, however, in the absence of a central arteriole, the random blood-flow through the venous plexus, the presence of giant capillary loops, and their constant presence on the lips. Campbell de Morgan spots are usually slightly papular, occur mainly on the thorax, and are with difficulty blanched by pressure. In hereditary hæmorrhagic telangiectasia a family history

of bleeding is usually obtainable and the skin lesions are distinguished by the presence of venules which are up to 0·5 mm. in diameter, raised above the skin surface, and larger than those seen in Raynaud's disease.

Simple telangiectases, described by Lewis (1926), especially those due to exposure to sunlight, may closely resemble the lesions seen in Raynaud's disease, both macroscopically and microscopically. They usually involve larger areas of skin than do those seen in Raynaud's disease, and rarely occur on the mucosa of the lips. The main difference, however, lies in the response to local stimuli. Lewis (1929) has shown that the dilated vessels of simple telangiectases do not respond to local stimulation by touch, adrenaline, or histamine, and my observations confirm this. The vessels in Raynaud's telangiectases, although as much dilated as those seen in simple telangiectases, retain their normal contractility.

Nature of Lesions

The causes of telangiectasia are multiple. Spider nævi are probably associated with high levels of circulating œstrogens (Bean et al. 1949); multiple hæmorrhagic telangiectases are the results of an inherited defect of capillary development (Goldstein 1931); and Lewis (1926) advanced good reasons for believing that simple telangiectasia followed repeated injury to the vessels, either actinic or due to past infection.

The telangiectasia of Raynaud's disease is not likely to be due to injury to the tissues from repeated ischæmia,

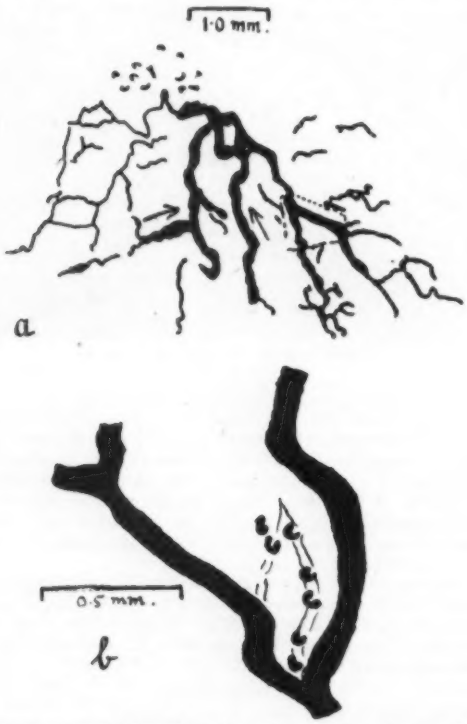

Fig. 4—Drawing of lesion about 4·0 × 2·5 mm. from dorsum of left hand of case 6:
a, arrows indicate direction of blood-flow; to left above a group of giant capillary loops was just visible; lesion remained unchanged during 15 minutes needed to make drawings; lightly stroked at the end of this time the many isolated lengths of venule became connected to the main network by visible communications.
b, part of lesion shown in *a* seen under higher power; giant capillary loops invisible under lower power were revealed, and a deeply lying dilated vessel was just visible; this may have been an arteriole because the row of capillary loops coincided with it.

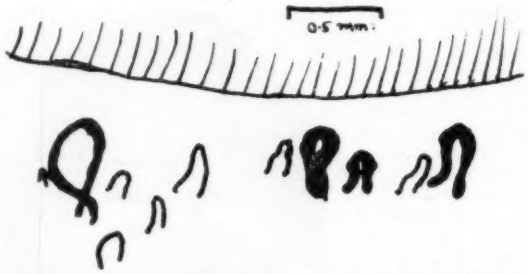

Fig. 5—Normal and giant capillary loops in skin of nail-fold (case 2). Both normal and giant loops dilated temporarily after light stroking.

because this affects the digits, whereas the telangiectases are commonest on the face. The lesions very closely resemble simple telangiectases due to trauma, commonly some form of irradiation—sunlight, heat, or X rays. Sunlight, however, can be excluded as a cause of these lesions in case 9 because this patient had worn a nun's habit since 1935, and her arms were always covered. She had first noticed the "pink spots" in 1952 and had observed that, although many new lesions had appeared, no lesion had regressed. The patchy distribution of the lesions is also unexplained but is characteristic of all types of telangiectasia and may indicate some local factor in the skin.

Summary

Telangiectases were found in each of nine women in whom Raynaud's disease had been present for more than ten years.

The lesions occurred on the face, hands, and forearms and consisted of dilated capillary loops and venules of the subpapillary venous plexus.

The vessels were differentiated from previously described telangiectases by their reaction to stimulation by touch, adrenaline, and histamine.

Most of the observations described here were made while I was working as a Beit memorial research fellow with the

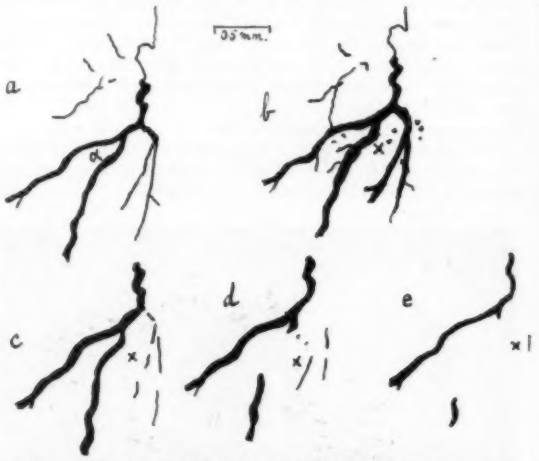

Fig. 6—*a*, part of lesion on dorsum of right hand of case 6.
b, same lesion after being touched at α; previously visible vessels have dilated, new vessels have appeared, previously isolated venules have been joined to main network, and a few capillary giant loops have become visible. After this drawing had been made, a pin-hole was made at X, the paraffin was wiped off, and 1/1000 adrenaline applied.
c, same lesion two minutes after application of adrenaline.
d, five minutes after application of adrenaline.
e, seven minutes after application of adrenaline.

Clinical Research Unit, Guy's Hospital. I am indebted to the physicians and surgeons of Guy's Hospital and of the London Hospital who referred their patients to me for this investigation; and to the photographic departments of Guy's Hospital, the London Hospital, and the Bernhard Baron Institute of the London Hospital for the photographs.

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PHENYLKETONURIA

TWO UNUSUAL CASES *

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PHENYLKETONURIA is an inherited biochemical abnormality in the oxidation of phenylalanine to tyrosine. The patients described in the original report on the disease by Fölling (1934) were severely retarded mentally, and most subsequent clinical reports on the condition have emphasised the severe mental defect which accompanies the biochemical disorder. Thus Jervis (1939), in a report on 213 patients with phenylketonuria, commented: "pronounced intellectual defect is present in all cases." Munro (1947), Alvord et al. (1950), and most pædiatric textbooks concur in stating that most patients are idiots and the remainder imbeciles.

The first indication of exceptions lay in reports by Cowie (1951a and b) of a phenylketonuric boy with low-normal intelligence. She found that he excreted less phenylpyruvic acid than 14 other patients she studied, and suggested that he might not have the constant and complete block in phenylalanine metabolism which other patients had appeared to have (Borek et al. 1950). Later Tyler and Armstrong (1954) cited unpublished observations of Jervis and of Yannet on two other cases with low-normal intelligence. Armstrong and Tyler (1955) reported on a 13-month-old phenylketonuric girl who showed little, if any, sign of mental or neurological abnormality. In addition, Bickel (1956) has observed a 5-year-old phenylketonuric girl with normal intelligence.

We report here two more cases of phenylketonuria with less mental retardation than is usually observed in this disease. One patient is a child who had not been regarded as retarded and was diagnosed by chance. The other is a man who shows clear signs of a much greater ability to metabolise phenylalanine than have the other patients studied in this laboratory.

Case-reports

Case 1.—A blonde, blue-eyed girl, aged $2^1/_2$ years, was admitted to the Salt Lake County General Hospital on April 11, 1956. She had been referred by her pædiatrician because of suspected primary tuberculosis.

While she was being examined it was noticed that she had the odour of phenylacetic acid which is usually present around patients with phenylketonuria. Her urine, tested with ferric chloride, gave the dark-green colour of phenylpyruvic acid. Quantitative estimation (Armstrong and Low) of two specimens of urine showed 0·8 and 1·5 mg. of phenylpyruvic acid for every milligramme of creatinine: the first value is considerably lower than is usually observed in most patients with phenylketonuria. The fasting serum-phenylalanine levels at the original examination and ten weeks later were 25 and 31 mg. per 100 ml. respectively: these values are lower than those usually observed in patients of this age (Armstrong and Low).

Her general physical and neurological examination was normal; she had no skin lesions, and it was the impression of the attending and house staffs and of the referring pædiatrician that she was of normal intelligence. The developmental milestones (motor, language, adaptive and behaviour-social) appeared normal, according to the history obtained from both parents. The patient, her parents, and her 4-year-old brother were referred to Dr. Moroni H. Brown, of the department of psychology, University of Utah, for psychometric testing. The father was examined according to the Wechsler adult intelligence scale. He scored 117 on the verbal scale and 107 on performance, with a full-scale intelligence quotient (I.Q.) of 113. The mother scored verbal 106, performance 108, full-scale 109 on the Wechsler-Bellevue intelligence scale form I. According to the revised Stanford-Binet scale, form L, the brother had an I.Q. of 100, and the patient (whose chronological age was then 2 years 9 months) a mental age of 2 years 3 months, with I.Q. 82.

The patient had never had any seizures. Electro-encephalography, during waking and sleep, revealed a moderate number of temporal spikes (Low et al.).

The brother did not excrete phenylpyruvic acid in his urine. Examination of the urine and blood of an infant sister showed that she did not have phenylketonuria.

Case 2.—This man, 50 years old and blue-eyed, is an inmate of the Utah State Training School. He is now almost bald but has a little white hair, which was formerly reddish-blond. He was admitted a few years ago because of social problems rather than economic inadequacy. He had completed grammar-school in a rural community and at present is a good worker in the laundry and cleaning-plant at the institution.

He is of sturdy build, is well nourished, and has a very light and sensitive skin. There are no important abnormal findings on general physical examination. His superficial and deep tendon-reflexes are normal and symmetrical, and no abnormal reflexes were elicited. He has a friendly outgoing personality and is quite talkative. He is somewhat emotional and worries about minor events that would not bother the average adult. Psychometry by Dr. Mark Allan, of the Brigham Young University, Provo, Utah, gave him a verbal score of 68, a performance score of 74, and a full-scale I.Q. of 67. Seizures are denied, and electro-encephalograms obtained during waking and sleep were normal.

His fasting serum-phenylalanine level was 22 mg. per 100 ml. His excretion of phenylpyruvic acid has been consistently 0·2–0·3 mg. per mg. of creatinine in all of several samples of urine, varying from twenty-four-hour collections to spot collections, made at intervals over two years. This is much lower than is observed in most patients with phenylketonuria, and often the phenylpyruvic acid in his urine was not detected by the ferric-chloride test. A chromatographic estimation of his excretion of phenylalanine showed that it, too, was consistently very much less than in most patients with phenylketonuria.

Discussion

The finding that most patients with phenylketonuria had severe mental retardation was undoubtedly due to the fact that most of the patients studied had been detected by screening inmates of institutions and by examining their siblings. It is now evident, however, that affected persons can easily escape recognition. Thus case 1 was detected by chance while being examined for something else. Although she scored less on psychometry than did her parents and her brother, she would

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certainly be classed in the low-normal range. The little girl reported previously (Armstrong and Tyler 1955, case 3) showed no obvious abnormality and was examined only because she had a severely affected older sibling. Our second patient, as already stated, was sent to an institution for social rather than economic reasons, and he was detected in the course of screening the population of the institution. Cohen and Kozinn (1949) also have reported on an older man with phenylketonuria who supported a family in an urban environment and was detected only because he had a severely affected child. These cases and the others cited above make it clear that phenylketonuria is not incompatible with normal or near-normal mental function. This may be of considerable significance as regards the future treatment of infants with phenylketonuria and the prospect of a more nearly normal life for them, since it may not be necessary to continue the somewhat difficult dietary control of phenylalanine intake for more than a few years during early childhood.

The biochemical findings in cases 1 and 2, in addition to those reported in Cowie's (1951a) patient, indicate that the biochemical aberration in phenylketonuria may not be the all-or-nothing phenomenon that previous work had suggested (Borek et al. 1950). Unfortunately case 1 has not been available for more detailed study, but the analytical data obtained from case 2 show that he must be able to metabolise a considerable portion of the phenylalanine he ingests. He is a well-nourished healthy adult with a good food intake, yet he has a low serum-phenylalanine level, excretes a comparatively small amount of phenylpyruvic acid (400 mg. a day), and excretes much less phenylalanine than other patients with phenylketonuria.

Normal or near-normal intelligence in phenylketonuria could presumably exist under three conditions: (1) during the first few months of life, because the biochemical abnormalities, seizure disorder and deterioration, are usually not yet present (Armstrong and Binkley); (2) in children who have been maintained on a restricted phenylalanine intake before deterioration becomes evident or very shortly after (Armstrong and Binkley; Horner and Streamer 1956); and (3) in persons in whom the oxidation of phenylalanine is incompletely blocked, as perhaps in the two present cases.

Summary

Two cases of phenylketonuria are reported in which the patients had greater mental ability than usual in this disease.

Normal or near-normal intelligence in phenylketonuria is discussed.

We wish to thank Dr. Robert S. Rothwell for permission to study case 1 and her siblings, and Dr. Vernon F. Houston for his help in studying case 2.

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MALIGNANT HYPERTENSION WITH INCREASED SECRETION OF ALDOSTERONE AND DEPLETION OF POTASSIUM

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THE isolation of aldosterone from the amorphous fraction of adrenal extract by Tait et al. (1952) was rapidly followed by the recognition of various clinical states accompanied by increased urinary excretion of aldosterone. These conditions were classified by Conn (1956) into two groups—primary and secondary hyperaldosteronism. In primary hyperaldosteronism the excessive production of aldosterone is caused by an abnormality of the adrenal cortex.

The first case of this kind was described by Conn (1955) in a patient with an aldosterone-producing adrenocortical adenoma. By now more than 30 cases of this disease are known (Conn 1956), although only 5 have been published so far. 4 of these patients had a benign adenoma (Evans and Milne 1954, Conn 1955, Mader and Iseri 1955, Chalmers et al. 1956, Conn and Louis 1956), and 1 had a carcinoma (Foye and Feichtmeir 1955).

In secondary hyperaldosteronism the excessive production of aldosterone is the result of an abnormality which has arisen outside the adrenal gland and there are no specific clinical features ascribable to aldosterone.

Examples are œdema of different kinds, nephrotic syndrome, congestive heart-failure, liver cirrhosis (Luetscher and Johnson 1954, Luetscher et al. 1954). To this group belongs also hyperaldosteronism associated with either a low intake of sodium (Axelrad et al. 1954) or an excessive renal loss of salt (Luetscher and Curtis 1955).

We describe here a case of hyperaldosteronism with malignant hypertension in a patient who presented several of the clinical and biochemical features reported for primary hyperaldosteronism but apparently without any morphological abnormality of the adrenal glands.

Case-report

A girl, aged 13, previously in good health apart from two attacks of pneumonia at the ages of 3 years and 7 years, had in December, 1954, a pyrexial disease associated with a rash, which was said to have disappeared within a few days. Towards the end of January, 1955, she complained of intermittent abdominal pain, occasionally with vomiting, for which she was admitted to a local hospital. On examination she appeared pale and tired, but otherwise no abnormality was found. During her six-week stay in hospital she had a slightly raised temperature, pulse-rate 80–100, and blood-pressure 100/70 mm. Hg. Her blood-urea, serum-chloride, and serum-bicarbonate levels were normal. Her urinary sediment was normal, and no proteinuria was present except possibly on one occasion, when a questionable positive reaction was recorded. Her erythrocyte-sedimentation rate (E.S.R.) was 80–100 mm. in 1 hour (Westergren) and her antistreptolysin titre was increased. Treatment with various antibiotics proved ineffective, and her clinical condition remained unchanged. On March 24, 1955, she was transferred to the county hospital for further observation. Two weeks later she had an attack of general convulsions and unconsciousness. Lumbar puncture yielded clear cerebrospinal fluid under increased pressure. She was immediately transferred to the neurosurgical department at this hospital. On admission she was awake and restless; later she became drowsy. During the next six days she had eight convulsive fits, which consisted partly of general tonic spasms with flexed elbows and wrists and extended fingers and partly of

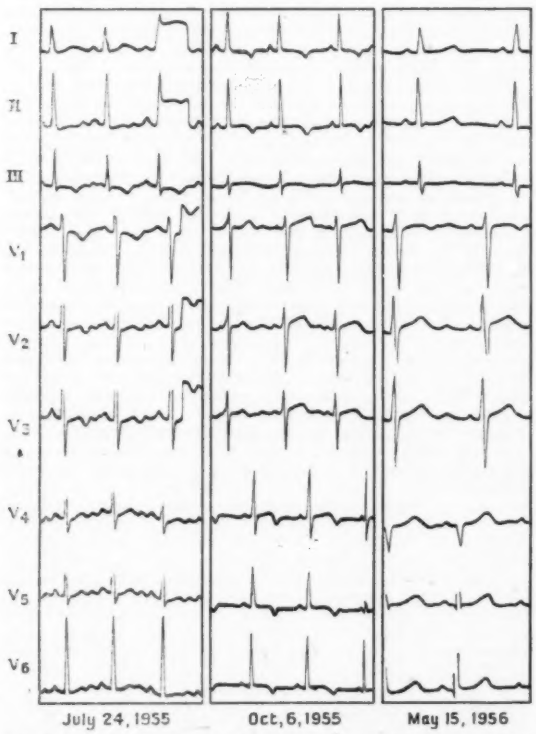

Fig. 1—Electrocardiogram showing prominent U waves, left ventricular strain, and normal pattern.

more localised clonic contractions of the limb and facial muscles. Between these attacks no abnormal neurological signs were found (ophthalmological and otological examinations normal). At three auscultatory measurements her blood-pressure was 160/120, 170/110, and 120/90 mm. Hg. Frequent palpatory readings showed that the systolic pressure fluctuated between 110 and 160 mm. Hg. Electro-encephalography showed abnormalities with 2–3 cycles per sec. with high voltage, at times with additional alpha waves. Since there were no signs of intracranial tumour, she was transferred to the neurological department on April 13, 1955. She continued to have fits of clonic contractions and general seizures of tonic spasms with loss of consciousness at irregular intervals. On admission her blood-pressure was 120/90 mm. Hg and two weeks later 160/120 mm. Hg. Daily readings subsequently showed values rising to a constant level of 190–200 mm. Hg systolic and 140–150 mm. Hg diastolic. The output of urine increased to about 2 litres in 24 hours, and proteinuria developed. An Addis test showed maximal specific gravity 1·018; urea-clearance was 58 ml. a minute. The urinary sediment was normal. Intravenous pyelography on June 21, 1955, was normal. The E.S.R. was 40 mm. in 1 hour, antistreptolysin titre questionably raised, and temperature normal. Ophthalmological examination on May 3, 1955, revealed mild papillœdema and hypertensive vascular changes. The papillœdema increased until, six weeks later, the discs protruded more than two dioptres. Biopsies of skin and skeletal muscle on June 1 and June 20 showed no abnormalities (the vascular structures especially appeared normal). Repeated examinations of blood smears showed no eosinophilia. Since the hypertension persisted and electrocardiography showed left ventricular strain and U waves, the patient was transferred to the medical department on July 14, 1955. She reported that she had had tingling sensations in her hands occasionally. Since the onset of the disease six months earlier her body-weight had fallen from 43 to 32 kg. No paralysis had been observed.

On examination the patient looked pale, emaciated, and tired. She was so weak that she could not stand. There was increased pulsation of the precordium and carotid arteries. The apex-beat was forceful and slightly to the left of the mid-clavicular line in the fifth intercostal space. A systolic murmur was audible in the second left intercostal space. Her blood-pressure was 195/150 mm. Hg, pulse-rate 120. Pulmonary congestion and œdema were absent. The breasts were infantile. Pubic hair was absent, and there was no abnormal hair growth in other areas. The external genitalia appeared normal. There was normal arterial pulsation in the lower limbs, and the blood-pressure in the popliteal artery was equal to that in the brachial artery. The tendon-reflexes were normal. Chvostek's and Trousseau's signs were negative. Paralyses were not present.

Investigations.—The hæmoglobin was 92% (Haldane), erythrocytes 4,700,000 per c.mm., leucocytes 7300 per c.mm. (differential count normal), eosinophils 50–200 per c.mm. Liver-function tests were normal. The serum-calcium level was 10·4 mg. per 100 ml. and serum-phosphorus level 4·9 mg. per 100 ml. The urine was either alkaline or neutral and contained protein 2 g. per litre (Esbach). Microscopy of the urinary sediment showed 1 or 2 red cells and 3 or 4 white cells per high-power field. Cultures were sterile. The urinary output was about 4 litres per 24 hours, and the specific gravity of the urine was about 1·006. The blood-urea was 22 mg. per 100 ml. The plasma-carbon-dioxide was 32 m.eq., serum-chloride 89 m.eq., serum-sodium 125 m.eq., and serum-potassium 2·9 m.eq. per litre. The fasting blood-sugar was normal, and there was no glycosuria. The serum-protein was 7·2 g. per 100 ml. with a slight increase in the α_2 fraction. The results of electrocardiography on July 24, 1955, are shown in fig. 1.

Course.—During the next few weeks the papillœdema increased, the discs protruding 5 dioptres, and plaques of white exudate developed in both retinæ. Convulsions continued, but at a slower rate, mostly as episodes with clonic contractions and brief confusion. The patient was given an ordinary hospital diet and drank freely. Dehydration was never present. She vomited slightly almost daily; the vomit

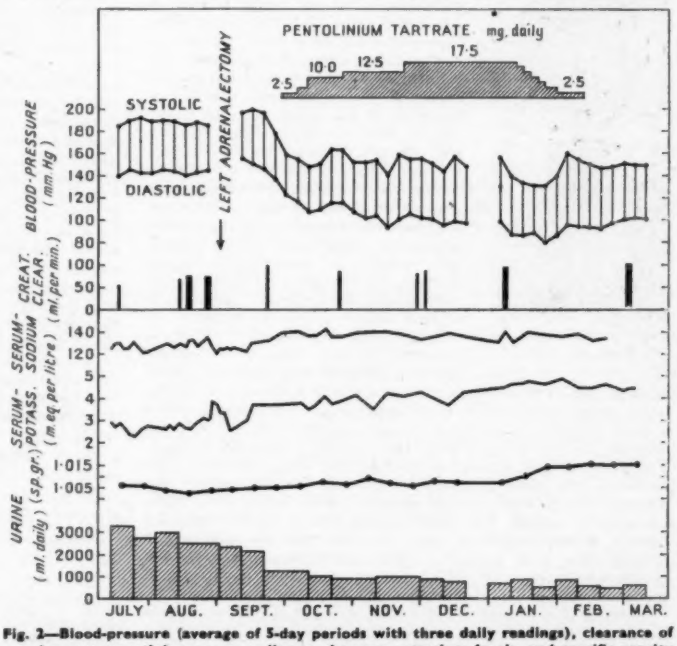

Fig. 2—Blood-pressure (average of 5-day periods with three daily readings), clearance of endogenous creatinine, serum-sodium and serum-potassium levels, and specific gravity and output of urine (average of 10-day periods).

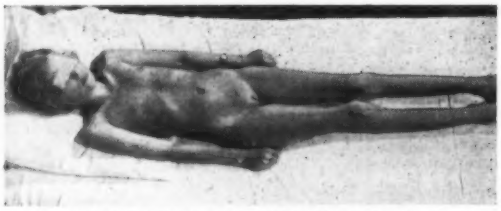

Fig. 3—Patient in August, 1955, before operation.

was collected and analysed for sodium and potassium. The average loss of fluid by vomiting amounted to 170 ml. a day, the average loss of sodium 20 m.eq., and of potassium 6 m.eq. a day. She was therefore given a daily supplement of 25 m.eq. of sodium and 20 m.eq. of potassium chloride by mouth. During the first four weeks the serum-potassium level was 2·3–2·9 m.eq. per litre, and the serum-sodium level 120–130 m.eq. per litre (fig. 2). Slight hypochloræmia and alkalosis were constantly present. Endogenous creatinine clearance was moderately decreased; repeated determinations showed 60–90 ml. a minute, calculated per 1·73 sq. m. of body-surface. The 24-hour excretion of adrenaline and noradrenaline was within normal limits, and no significant fall in blood-pressure took place after intravenous injection of phentolamine 2·5 mg. Results of hormone analyses on 24-hour samples of urine are given in table I, which shows that the corticoid excretion varied between values at the upper normal limit and higher values. The excretion of 17-ketosteroids and 17-ketogenic steroids was normal. The 24-hour excretion of aldosterone and hydrocortisone was determined by Mrs. S. A. Simpson and Dr. J. F. Tait at the Middlesex Hospital Medical School. The excretion of aldosterone was increased to 38 μg. in 24 hours, and that of free hydrocortisone was 72 μg. in 24 hours. Tomography after presacral insufflation of oxygen suggested enlargement of the left adrenal gland. Simultaneous intravenous pyelography was normal. It was therefore believed that the patient had an adrenocortical tumour on the left side, producing excessive amounts of aldosterone and possibly also of hydrocortisone. At the time when this patient was studied, only one case of aldosterone-producing cortical adenoma had been published, and in view of the fact that the X-ray evidence of a tumour was not clear-cut, it was decided, if no tumour was present, to do a subtotal adrenalectomy. During the last seven days before the operation the patient was given a daily supplement of 80 m.eq. of potassium chloride, which increased the serum-potassium level to 3·8 m.eq. per litre. No tetany developed during this period of high intake of potassium. The patient's appearance at this time is shown in fig. 3.

Fig. 4—Patient in February, 1956.

Operation.—On Sept. 2, 1955, a bilateral lumbar incision was made (Prof. N. Blixenkrone-Møller). Both adrenal glands were found to be macroscopically normal. The left adrenal gland, which was slightly larger than the right and a little harder at the upper pole, was removed. The right adrenal gland was left intact. Both kidneys appeared normal. The internal genitalia were palpated and found normal. The removed left gland weighed 5·2 g. On the cut surface the adrenal cortex and medulla seemed perfectly normal. The histological examination was done by Dr. H. J. Whiteley, of Cardiff Royal Infirmary, who reported that no histological abnormality was present. The immediate postoperative course was uneventful. The patient was given cortisone in moderate dosage during the first five postoperative days.

Postoperative Course.—The administration of potassium was discontinued on the day before the operation. The serum-potassium level decreased immediately after, reaching a minimum of 2·5 m.eq. per litre on the fifth postoperative day. Thereafter it rose to a level above 3·5 m.eq. per litre without potassium therapy. No further convulsive fits were observed, and vomiting ceased. The blood-pressure, however, did not fall. The papillœdema remained unchanged, and in the left retina exudate covered the macula, with imminent risk of permanent loss of central vision. In this situation it was felt urgently necessary to lower the blood-pressure, and a trial of antihypertensive drugs was decided on instead of awaiting the possible hypotensive effect of a further subtotal or total ablation of the remaining adrenal gland. On Sept. 24, 1955, subcutaneous injections of pentolinium tartrate were started, increasing to a maximum of 17·5 mg. daily. The blood-pressure fell quickly from 200/140 to 150/90 mm. Hg. Subsequently the retinal lesions regressed, the papillœdema disappeared completely, and the large confluent exudate was resolved into small elements. The left ventricular strain disappeared from the electrocardiogram, and eventually a normal pattern was obtained (fig. 1). The serum-sodium and serum-potassium returned to normal (fig. 2). The plasma-carbon-dioxide fell from 31–34 to 25–28 m.eq. per litre, and the serum-chloride rose from 80–90 to 100–110 m.eq. per litre. The polyuria subsided gradually, and the specific gravity of the urine increased (fig. 2). An Addis test in January, 1956, showed specific gravity 1·024. The blood-urea was normal both before and after operation. The proteinuria decreased from 1·0–2·0 to 0·3–0·4 g. per litre, and the urinary sediment became normal. An electro-encephalogram on Jan. 27 showed only a slight abnormality compared with the preoperative curve. Striking clinical improvement took place. The patient gained in strength, and two months after the operation she was up and about. Her body-weight increased from 30 to 46 kg. in five months (fig. 4). The size and configuration of the heart on radiography were normal before the antihypertensive therapy. Subsequently, moderate ectasia with prominent pulmonary conus developed and remained unchanged. The changes in hormone excretion are shown in table I. The excretion of reducing corticoids returned to normal. The excretion of aldosterone was measured two and six months after the operation and on both occasions found to be close to the average normal value. The excretion of hydrocortisone was reduced considerably compared with the preoperative level. Treatment with pentolinium tartrate was gradually levelled off and finally discontinued in January. This was followed by only a slight rise in blood-pressure to about 160/100 mm. Hg. Clinical condition and electrolyte status remained unchanged thereafter, and the patient was discharged on March 13.

TABLE I—EXCRETION OF HORMONES

—	17-Ketosteroids (mg. per 24 hr.)	17-Ketogenic steroids (mg. per 24 hr.)	Reducing corticoids (mg. per 24 hr.)	Aldosterone (μg. per 24 hr.)	Hydrocortisone (μg. per 24 hr.)
Normal range	1·8–5·0	5–20	0·25–0·60	5·0–20·0	10·0–90·0
Preoperative	1·6–5·4	6–12	0·57–1·42	38·0	72·0
Post-operative:					
2 mos. ..	0·7–1·9	..	0·41–0·46	11·8	8·4
6 mos. ..	2·4–3·1	..	0·37–0·55	12·8	20·7
9 mos. ..	2·6	4	0·29	..	..

Follow-up.—In May, nine months after the operation and four months after withdrawal of pentolinium tartrate, the blood-pressure was unchanged at 160/100 mm. Hg. There was no papillœdema, but there were still some residual exudates and hypertensive vascular abnormalities. The serum-electrolyte levels, urinary output, and specific gravity were normal. The urine contained a trace of protein; its sediment was

TABLE II—RENAL EXCRETION OF POTASSIUM

Date	Added KCl (m.eq. daily)	Serum-K^+ level (m.eq. per litre)	Creatinine clearance (ml. a minute)	Filtered load of K^+ (m.eq. daily)	Urinary excretion of K^+	
					m.eq. daily	% of filtered
Aug. 17, 1955	20	2·85	53	218	62	28
Aug. 27, 1955	80	3·07	51	226	79	35
Jan. 5, 1956..	0	4·15	72	430	50	12
March 1, 1956	0	4·40	82	519	38	7

TABLE III—EXCRETION OF SODIUM AND POTASSIUM

—	Body-weight (kg.)	Potassium (m.eq. daily)	Sodium (m.eq. daily)	Na/K
Preoperative (40 days)..	31·3–30·9	65	138	2·1
Postoperative (43 days)	31·0–35·7	45	88	2·0

normal. Creatinine clearance was 125 ml. per 1·73 sq. m. a minute.

Electrolyte Metabolism.—Metabolic balances were not studied, because the patient could not take a standardised diet. Apparently, however, there was chronic depletion of potassium before the operation, owing to increased renal loss of potassium. The reduced capacity to retain potassium is shown by the fact that the 24-hour renal excretion of potassium was 60–80 m.eq. at a serum-potassium level below 3·0 m.eq. per litre. Table II shows the renal excretion of potassium at various times during the hospital stay. The clearance of endogenous creatinine was measured for three or two consecutive 24-hour periods simultaneously with daily determinations of potassium in serum and urine. The figures given are average values. If the creatinine clearance represents the glomerular filtration-rate, 28% of the filtered load of potassium is excreted in the urine. Repeated determination, when the patient was on a large intake of potassium, showed a still greater relative excretion. Postoperatively only 12% and 7% was excreted. Table III shows the average excretion of sodium and potassium per 24 hours in periods of 40 and 43 days immediately before and after the operation. It appears that both sodium and potassium were excreted in larger quantities preoperatively than postoperatively, and that the sodium-potassium ratio remained unchanged throughout the two periods.

Discussion

The patient described here presented several of the clinical and biochemical features which have been reported to be present in primary hyperaldosteronism as defined by Conn (1955, 1956). She had hypertension, muscular weakness, paræsthesiæ, tetany, thirst, and polyuria. Her urine was alkaline and of low specific gravity and contained protein, and she had persistent hypokalæmia and alkalosis. A large intake of potassium was followed by a slow rise in serum-potassium level and increased renal excretion, suggesting impaired capacity to retain potassium in the body.

The most outstanding differences between our patient and the cases of primary hyperaldosteronism earlier reported are: (1) rapidly developed malignant hypertension; (2) absence of morphological abnormalities of the adrenal cortex; and (3) the presence of hyponatræmia. Clinically, her condition was dominated by hypertension, extreme general weakness, emaciation, and convulsions.

The ætiological relationship between hyperaldosteronism and hypertension, and the significance of the two therapeutic measures, unilateral adrenalectomy and antihypertensive drug therapy, can only be partially explained. Hypertension of varying severity was present in all cases so far reported, and removal of the tumour led to a fall in blood-pressure extending over a few weeks. Genest et al. (1956) found increased excretion of aldosterone in patients with benign and malignant hypertension but without clinical hyperaldosteronism. However, it seems clear that aldosterone does not exert a direct pressor effect in analogy with noradrenaline from a phæochromocytoma. Aldosterone can maintain normal blood-pressure in adrenalectomised dogs (Swingle et al. 1954) and in patients with Addison's disease (Kekwick and Pawan 1954, Mach et al. 1954, Prunty et al. 1954), but it has not been possible to induce hypertension in rats under the same experimental conditions in which deoxycortone acetate leads to hypertension and renal lesions (Gross et al. 1955). If a hormonal pressor effect is present, it is conceivable that it acts indirectly through disturbances in the content and distribution of electrolytes and water in the body. In patients with primary hyperaldosteronism the serum-sodium level is slightly raised, and an excess of sodium and a depletion of potassium have been demonstrated by isotope dilution, muscle analyses, and metabolic balances. Our electrolyte measurements allow of only limited conclusions about the electrolyte status in this patient. It appears safe to assume that she was depleted of potassium before the operation. This is shown by the large renal excretion of potassium at a low serum-potassium level. It is more difficult to assess the content and distribution of sodium in our patient; but, since she had hyponatræmia and no œdema before the operation, it seems difficult to accept that sodium retention was present. Her extracellular space, determined with sodium thiosulphate, was 6·5 litres, corresponding to 20% of her body-weight. This volume does not exceed what we have found in underweight women in our laboratory.

In his patient with primary hyperaldosteronism Conn (1955) observed that the administration of either corticotrophin or hydrocortisone led to sodium diuresis, and he stated that it appears as if "in the presence of excessive activity of aldosterone, elevation of the 17-hydroxysteroid level acts as an antagonist to aldosterone with respect to the direction in which sodium moves across cell membranes." It is possible that our patient also produced increased amounts of 17-hydroxysteroids, because the preoperative excretion of reducing corticoids and free hydrocortisone was large compared with the postoperative values. The hyponatræmia might then be a consequence of an exchange between intracellular potassium ions and extracellular sodium and hydrogen ions.

Finally, the hyponatræmia might be of a similar origin as that described in patients with severe emaciating diseases (Sims et al. 1950), which is supposed to be due to a primary reduction of the intracellular tonicity. This so-called asymptomatic hyponatræmia is reported to disappear when the patients gain weight and improve clinically.

Two treatments were given to our patient. The result was subsidence of electrolyte and urinary abnormalities and conversion of the malignant hypertension into a relatively mild benign phase. The significance of the unilateral adrenalectomy may be supposed to consist in a reduction of the excess of aldosterone and possibly also of 17-hydroxysteroids. A few days after the removal of the adrenal gland the serum-potassium level rose and convulsions stopped. The blood-pressure, however, remained unaffected, and the subsequent antihypertensive treatment, which was started 24 days after operation, prevented our seeing whether there was a delayed response. The persistence of hypertension after removal of the original cause is, however, not unusual in several other types of hypertension, including Cushing's syndrome. The beneficial effect of pentolinium tartrate was prompt, and after three months' course with steady improvement treatment was tentatively discontinued. Apart from a slight rise in blood-pressure to 160/100 mm. Hg no change took place in clinical condition or serum-electrolyte level.

The abnormalities in the renal function in our patient—reduced filtration-rate, polyuria, isosthenuria, and proteinuria—may be explained as consequences of chronic depletion of potassium (Schwartz and Relman 1953, Relman and Schwartz 1955). The return to normal of creatinine clearance and the disappearance of polyuria after correction of the electrolyte abnormalities are in favour of this. If the kidney lesion had been due to hypertension, a decrease in creatinine clearance due to reduced filtration pressure might have been expected, as observed in hypertensives after either total adrenalectomy (Thorn et al. 1952) or the giving of antihypertensive drugs (Freis et al. 1953).

A comparison of the quantities of aldosterone excreted by patients with hyperaldosteronism is hardly possible at present, because the analytical methods differ in various laboratories. In the patient described by Chalmers et al. (1956) as having retention of sodium, depletion of potassium, and severe hypertension, aldosterone analyses were done in the same laboratory as ours. These workers observed normal excretion of aldosterone on two occasions before the operation, and only the assay of a 7-day pooled specimen of urine revealed an increased excretion of 28 μg. per 24 hours. Milne (1956) reported a patient with clinical findings and metabolic disturbances as in primary hyperaldosteronism but with an excretion of aldosterone only slightly increased above the normal mean value. Comparison is further complicated by the fact that depletion of potassium may depress the excretion of aldosterone, and healthy people are therefore not suitable as controls for cases of primary hyperaldosteronism (Garrod et al. 1956).

The clinical and physiological abnormalities which constitute primary hyperaldosteronism are assumed to be due to production of excessive amounts of aldosterone. The occurrence of other clinical conditions with a large excretion of aldosterone throws doubt on the extent to which aldosterone is responsible for a specific clinical entity. The answer to this will depend on further development of analytical methods, which will allow more extensive investigations into the significance of aldosterone in clinical medicine.

Summary

A girl, aged 13, rapidly developed malignant hypertension and increased excretion of aldosterone. She had a low serum-potassium level with alkalosis, slight hyponatræmia and hypochloræmia, and urinary abnormalities (polyuria, low specific gravity, and proteinuria). The hypertension was preceded by severe muscular weakness, tetany, and loss of weight.

Chronic depletion of potassium was suggested by a large renal excretion of potassium at a low serum-potassium level. There was no evidence of retention of sodium.

Both adrenal glands appeared macroscopically normal at operation, and histological examination of the removed left gland showed no abnormality.

Clinical improvement took place, and the serum-electrolyte levels improved after operation, but the blood-pressure remained unchanged. Antihypertensive drug therapy converted the malignant hypertension into a mild benign phase. Electrolyte and urinary abnormalities disappeared, and the excretion of aldosterone was reduced to normal. After three months drug therapy was discontinued without reversal of clinical or biochemical abnormalities.

We are much indebted to Mrs. S. A. Simpson and Dr. J. F. Tait for the aldosterone analyses; Dr. H. J. Whiteley for the histological examination; and Dr. H. Gøtzsche and Prof. K. Lundbæk for valuable suggestions.

ADDENDUM

After the present paper had been submitted for publication a case of primary aldosteronism due to adrenocortical hyperplasia was reported by Prof. F. S. P. van Buchem and his colleagues (*Lancet*, Aug. 18, 1956, p. 335).

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ANEURYSM OF ABDOMINAL AORTA WITH ANURIA

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ANURIA due to aortic aneurysm is usually a terminal event, but in the case described below the presenting symptom was pain followed by anuria.

Case-report

A wood-machinist, aged 56, was admitted to the Radcliffe Infirmary, on Nov. 21, 1955, with three days' history of anuria. For five weeks he had been troubled by low backache, occasionally moving to his right groin. The pain was constant, "like toothache," and not sufficiently severe to interfere with work but bad enough to cause insomnia at times. A fortnight previously he had passed pink urine, but his doctor did not find any blood or protein in it. Three days before admission the production of urine stopped suddenly and completely—i.e., the patient had no desire to micturate, even after he had drunk four pints of water. He seemed so well that he was sent to hospital with a tentative diagnosis of hysterical retention of urine. He had previously been in good health, except that two years ago he had attended hospital as an outpatient because of headaches and had been found to be mildly hypertensive; this symptom cleared without special treatment.

On admission he was apprehensive but did not look or feel ill. Pulse-rate 120, blood-pressure 220/120 mm. Hg. He had advanced arteriosclerosis, but all his peripheral pulses were present. He had slight ankle œdema. His abdomen was a little distended, and the pulsation of his abdominal aorta was easily felt, but there was no tumour.

Investigations.—Blood-urea 126 mg. per 100 ml. Blood Wassermann and Kahn reactions negative. Electrocardiography showed left axis-deviation. Radiography of the chest showed moderate cardiac enlargement to the left, with prominent and unfolded aorta. An anteroposterior radiograph of the abdomen showed no abnormal mass.

The provisional diagnosis was "anuria due to occlusion of the renal arteries by an aneurysm," but the good condition of the patient and the paucity of supporting signs were against this. Other possibilities were "calculus anuria," a retroperitoneal neoplasm blocking the ureters, acute nephritis, and toxic anuria.

Treatment.—The anuria was managed conservatively at first by gastric tube-feeding with a mixture of glucose and arachis oil, and later with a 50% glucose solution through an inferior-vena-cava catheter. Three cystoscopies were done during the first week, when the bladder was found to be empty and normal, but the catheters could not be made to engage in the ureteric orifices.

Operation.—On the tenth day of anuria the blood-urea level was 252 mg. per 100 ml., and Mr. G. J. Fraenkel explored the right kidney. The tissues were œdematous, the kidney was normal in colour and consistence, and there was good pulsation

PROF. HOLTEN, DR. PETERSEN: REFERENCES—*continued*

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Fig. 1—Intravenous pyelogram six days after relief of anuria.

Fig. 2—Intravenous pyelogram five weeks after relief of anuria.

in the renal artery. The renal pelvis was small and inaccessible; after some manipulation a drain was inserted into it. Two hours after return from the theatre the wound dressings and the bed were found soaked, and a flood of urine from the wound continued thereafter.

Postoperative course.—Eighteen hours after the operation the patient passed 145 ml. of urine per urethram, presumably from the left kidney (sp. gr. 1·014, protein ++, chloride a trace, urea 0·9 g. per 100 ml.). The next forty-eight hours were troublesome because the diuresis caused at first dehydration and then paralytic ileus requiring an additional 8 litres of intravenous fluids. The blood-urea level dropped to 83 mg. per 100 ml. on the second postoperative day and 46 mg. per 100 ml. on the third. On the fifth postoperative day the urine (from the left kidney) contained protein 300 mg. per 100 ml. and urea 1·8 g. per 100 ml., and on the fourteenth postoperative day no protein at all and only occasional pus and epithelial cells in the centrifuged deposit.

Intravenous pyelography on the sixth postoperative day showed brisk concentration of dye on both sides, and normal renal pelves, left ureter, and bladder; dye from the right side drained through the nephrostomy, and the right ureter was not outlined (fig. 1). The patient refused an exploratory operation, and the next month saw the appearance of resistant infections, first of the urine from the nephrostomy, and then from the bladder. Six weeks after his admission intermittent obstruction of flow from the nephrostomy enforced further action. Intravenous pyelography (fig. 2) now showed delayed excretion and hydronephrotic changes on the right side; and right *retrograde pyelography* was at last successful (fig. 3): the opaque medium was extravasated into a large perinephric cavity and did not pass back again down the right ureter, but "the nature of this obstruction was not shown."

Second operation.—Seven weeks after admission Mr. Fraenkel drained the multilocular right perinephrenic abscess and removed the kidney. Both naked-eye and histological examination (fig. 4) showed acute pyelonephritis and many small abscesses.

Postoperatively the urine remained heavily infected despite full antibiotic therapy. The blood-urea level rose from 150 to 270 mg. per 100 ml. during the month after the nephrectomy, and by this time all the clinical features of uræmia were present. Oliguric renal failure increased, and the patient died on March 25, 1956, four months after admission. The blood-urea level was 457 mg. per 100 ml.

Necropsy Findings

There was anasarca, with fibrinous pericardial and pleural effusions. The left ventricle was hypertrophied, and severe atherosclerosis prevailed in all major arteries and throughout the aorta. At the bifurcation of the aorta an aneurysm, about 4 inches long and 4 inches wide, partially occluded both common iliac arteries; its posterior wall was formed of thrombus and fibrous tissue and had eroded the bodies of the lower lumbar vertebræ. It did not involve the renal arteries, which were normal and patent. The remaining (left) kidney was pale and œdematous. The left ureter ran down the outer edge of the aneurysm and was ensheathed by fibrous tissue, but neither it nor the left renal pelvis was dilated. Fig. 5 shows the back of the aneurysm and the left kidney. The wall of the atherosclerotic aneurysm was heavily infiltrated, mainly with plasma cells. Sections of the left kidney showed chronic glomerulonephritis with varying degrees of obliteration of all the glomeruli (fig. 6). There were also patches of tubular necrosis.

Discussion

Incidence, Ætiology, and Symptoms

Osler (1905) reported that aneurysms of the abdominal aorta accounted for about 1 in 1000 admissions at Johns Hopkins Hospital at that time; since then the number of syphilitic aneurysms (prevalent in the younger ages) has decreased and that of the arteriosclerotic ones increased. Kampmeier (1936), Mills and Horton (1938), Estes (1950), and Zech and Merendino (1954) have reviewed large series of abdominal aneurysms. Jennings

Fig. 3—Retrograde pyelogram six weeks after relief of anuria.

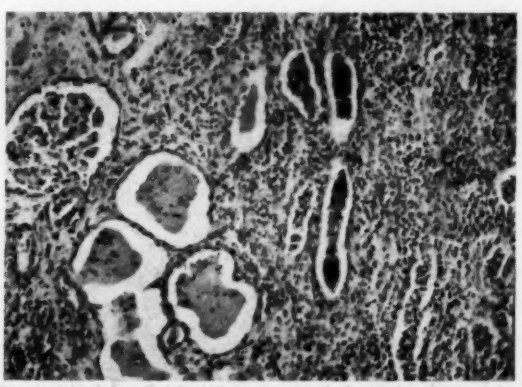

Fig. 4—Histology of right kidney (removed six weeks after relief of anuria).

(1941) and Betts and Rowlands (1953) report cases in detail.

Pain and either a pulsatile swelling or symptoms of rupture were the presenting features in most cases, but up to 30% of patients are said to have been symptom-free at the time of diagnosis.

Urological Manifestations

Surgical intervention for presumed perinephric abscess and renal colic has been described by Rusche and Bacon (1935) and King and Robinson (1956) when blood from the ruptured sac had spread retroperitoneally. Similar misinterpretations occurred in four of Uhle's (1941) five cases with urological symptoms. James (1935) recorded one case in which an unruptured aneurysm had obstructed both renal arteries and both ureters. Schloss and Kaplan (1953) report a bizarre case in which a leaking aneurysm is said to have led to transient rupture of a ureter.

Fig. 5—Posterior view of aneurysm and left kidney post mortem.

Where anuria has been described it has been a terminal event and due to either shock or occlusion of the renal arteries, usually shock (cf. Pyke 1956, who emphasises that hypotension is the main cause of anuria in dissecting aneurysm). We have found no record of another aneurysm with a similar story.

Reflex anuria.—Rare cases of reflex anuria have been reported in which there is equally complete interruption of the production of urine without subsequent evidence of renal damage, except for an initial and transient inability to retain water and electrolytes. Tomlin and Quilter (1953) describe a case in a man, aged 29, who underwent bilateral ureteric catheterisation on the day after presumed renal colic; he became completely anuric four times during next twelve days. These workers credited repeated epidural anæsthesia with the return of function (with floods of urine each time). The urine never contained any protein, and renal-function tests were eventually normal. Despite experimentation since the days of Cohnheim (1890) the mechanism of this kind of anuria remains uncertain. A vascular shunt of the kind described by Trueta et al. (1947) seems likely.

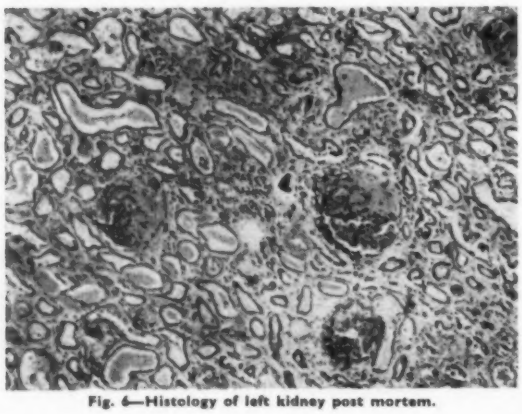

Fig. 6—Histology of left kidney post mortem.

Diagnosis

The provisional diagnosis of aortic aneurysm in this case was correct, but it was abandoned when the right kidney looked and felt normal at the nephrostomy operation on the tenth day of anuria. The following alternatives were considered: (1) retroperitoneal neoplasm obstructing the ureters, but this was not supported by pyelography; and (2) acute nephritis, but anuria in this condition is less abrupt, particularly in its recovery (Nabarro and Spencer 1951), and there was no histological evidence of glomerular damage in the right kidney removed a month after the anuria (the glomerulonephritic changes found in the left kidney at necropsy seem to have developed later). There was nothing to suggest a toxic anuria.

Renal biopsy at the nephrostomy operation on the tenth day of the anuria would have been of great academic interest but would hardly have advanced the diagnosis. Indeed, it is hard to see how this could have been made earlier except by aortography. Lateral radiographs in the later stages might have shown the erosion of the vertebræ.

Treatment

Conservative management of the anuria (Stock 1952) and nutrition through an inferior-vena-cava catheter served this patient well after vomiting had caused the Bull-Borst régime to be abandoned. Manipulation of the kidney at the nephrostomy operation anticipated the diuresis by two hours or less and may well have been its cause. The value of nerve blockade is still disputed, and this was not attempted.

The present treatment of choice of abdominal aneurysms causing major symptoms is excision of the aneurysm and reconstruction of the aorta with either a homograft or soft plastic material such as 'Orlon.' De Bakey and Cooley (1953) inserted aortic homografts in twelve patients, of whom eleven survived; in all these the aneurysm was below the renal arteries, and the bifurcation was involved in nine. Moore (1955) successfully resected and grafted the lower aorta in five patients; the two with atherosclerotic aneurysms were well eighteen and five months after the operation. A successful orlon graft has been reported by Kinmonth et al. (1955).

Moore (1864) introduced intravascular wiring, and Corradi (1879) added thermo-electric coagulation to this procedure. Failures and successes have been reported (Osler 1905, Blakemore 1947, Schloss and Kaplan 1953). This "blind" operation is said to relieve the pain of syphilitic aneurysms (Blakemore 1947) but it does not obviate the danger of rupture (Zech and Merendino 1954).

Prognosis

Estes (1950) records survival of more than a year in 67%, of more than three years in 49%, and of more than five years in 19% of all the cases of abdominal aortic aneurysm at the Mayo Clinic. Hutton and Galbraith (1938) described a man who died eleven years after a syphilitic aneurysm had first declared itself.

After a leak, however, most patients survive for less than a year (Estes 1950, Jennings 1941). Zech and Merendino (1954) found a threefold incidence of rupture in the arteriosclerotic over the syphilitic group; 65% (24 cases) of their patients with arteriosclerotic aneurysms with symptoms had died, all but two within the first month. These workers emphasise the bad prognostic significance of pain as a symptom of impending rupture in the arteriosclerotic aneurysms.

The deterioration in the present case, after the excellent recovery from the original anuria, was probably initiated by bad drainage of the right nephrostomy; this led to infection, at first in and around the right kidney, and

later in the left. The renal failure of the last few months was due to superadded glomerulonephritis: there was increasing hæmaturia and decreasing pyuria before the terminal period of anuria, and histologically the left kidney showed severe generalised damage to the glomeruli.

Summary

A case of atherosclerotic aneurysm of the abdominal aorta is described which presented with pain followed by anuria.

Probably the gradual and painful expansion of the aneurysm during the weeks before admission led to sudden reflex anuria as it compressed the right ureter.

A right nephrostomy operation on the tenth day was followed by a good immediate return of renal function, but the patient died of renal failure four months later.

I am obliged to Prof. L. J. Witts for permission to publish; Dr. Sheila Callender and Mr. G. J. Fraenkel for criticism; Dr. F. H. Kemp for the radiographs; and Dr. P. Griffiths for the necropsy findings and photographs.

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Preliminary Communication

A NEW URINARY STEROID RELATED TO MINERAL METABOLISM

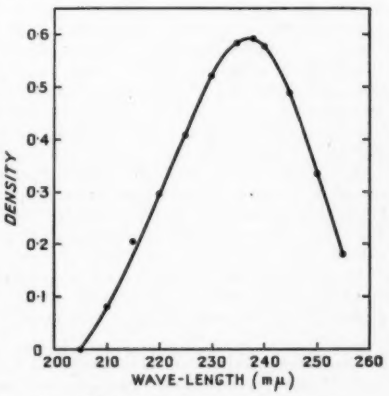
REFERENCE has been made [1] to a substance found in chloroform extracts of human urine which is not aldosterone but which might be related to mineral metabolism. This material was first detected in the urine of a patient named Mr. Wildego; and, since it seems desirable to give a name to it for the purpose of discussion, it is called here wildegosterone.

Method

Urine was extracted with chloroform either at neutral pH or continuously for 24 hours at pH1. The extract was washed with sodium carbonate and water and taken to dryness on a water-bath at 45°C under reduced pressure. The residue was chromatographed in the Zaffaroni system toluene: propylene glycol [2] for 3 days. The cortisone region was eluted with a mixture of equal quantities of chloroform, ethyl acetate, and methanol. The eluate was taken to dryness and chromatographed on the Bush C system,[3] in which hydrocortisone and aldosterone have an R_f of 0·33 and wildegosterone an R_f of 0·15. The wildegosterone often runs with a substance which gives a blue fluorescence when the paper is dipped in soda and heated: they were separated by overrunning the Bush C system for 24 hours. The wildegosterone was eluted with ethanol.

Chemical Characteristics

Wildegosterone reduces blue tetrazolium only slightly when it is in high concentration. In the soda fluorescence test [3] it gives the typical yellow colour of compounds with a Δ^4 3-ketone configuration. The ultraviolet absorption spectrum, against a paper blank, is shown in the accompanying figure. It has a sharp peak at 238 mμ. The infra-red absorption spectrum, also compared with a paper blank, was kindly determined by Dr. A. E. Kellie of the Courtauld Institute, Middlesex Hospital Medical School, who reported that it had a peak at 1634 cm.$^{-1}$ when an authentic Δ^4 3-ketone had a peak at 1638 cm^{-1}. There was no evidence of a 20-ketone or an 11-ketone.



Ultraviolet absorption of wildegosterone.

Attempts to elucidate further the chemical structure of this substance have been hampered by the fact that it appears to be rather unstable. Oxidation with sodium bismuthate, to determine if it is formaldehydogenic, gave inconclusive results. Chromatography of the product on the Bush B1 system revealed two spots, neither of which was in the position of the γ-lactone formed from aldosterone. No 17-ketosteroid was formed. The larger of two spots on the chromatogram was very polar and might represent unaltered wildegosterone, but no more pure wildegosterone was available to determine its running-rate in this system.

Addition of aldosterone to urine, which was then treated as described above, did not lead to the formation of wildegosterone. This suggests that the substance is probably not an artefact from this source.

Clinical Associations

The first patient in whom this compound was found was a man of 56, who complained of œdema of the ankles and weakness.

The weakness was relative because he could lift 84 lb. with one hand, but he could previously lift 112 lb. He had mild hypertension, considerable œdema, and moderate creatinuria. The serum-electrolyte levels were normal, and the excretion of aldosterone was 0·5 μg. daily (normal for this method is up to 2 μg. daily). He excreted 15–30 μg. of wildegosterone daily.

Observations on other patients were:

A woman of 44, with nephrosis (subacute nephritis), who excreted 3 μg. of aldosterone daily (i.e., above the normal range), also excreted 4–15 μg. of wildegosterone daily.

A man in severe cardiac and renal failure due to a phæochromocytoma excreted 1 μg. of wildegosterone daily.

Two patients who were given a rice diet (sodium content 1 m.eq daily) for 4 days before calcium infusion tests excreted up to 20 μg. of wildegosterone by the 4th day but none while on a normal diet.

Wildegosterone has never been found in the urine of healthy men and women on a normal diet; but administration of potassium chloride 10 g. daily to a healthy man led to the appearance of wildegosterone in his urine (7 μg. daily). A woman with unexplained œdema, who was excreting 5 μg. of wildegosterone daily, excreted considerably more when given an additional 7·5 g. of potassium chloride daily.

A man with hyperaldosteronism due to adrenal carcinoma [4] excreted daily up to 6 μg. of wildegosterone and

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20–30 μg. of aldosterone. The wildegosterone almost disappeared from his urine after incomplete removal of the tumour. A second patient with potassium deficiency and an adrenal adenoma (previously reported by Russell et al.[5] as potassium-losing nephritis) excreted high normal amounts of aldosterone. This was increased threefold by the administration of potassium chloride 12 g. daily, and then wildegosterone, up to 6 μg. daily, was excreted.

A young woman with Addison's disease, whose urine on chromatography showed no cortisone, aldosterone, or wildegosterone, was given intramuscular aldosterone 250 μg. The following 24-hour collection of urine contained 2 μg. of aldosterone and 1 μg. of wildegosterone.

In an investigation of adrenal function in 100 pregnant women the excretion of wildegosterone was found to increase steadily as pregnancy progressed, both in normal women and in those with toxæmia. The increase paralleled that of aldosterone in pregnancy.[6]

Conclusion

These findings suggest that wildegosterone is related to the metabolism of water and electrolytes. Since it is not an α-ketol, it seems unlikley to be biologically active, and the possibilities appear to be that it is a metabolite of either aldosterone or another steroid related to mineral metabolism.

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Medical Societies

THE HEBERDEN SOCIETY

Corticotrophin and Rheumatoid Arthritis

AT the society's meeting on Oct. 19 Dr. OSWALD SAVAGE gave the first of three papers from the West London Hospital dealing with the treatment of rheumatoid arthritis with corticotrophin (A.C.T.H.), which had been less used than cortisone for this purpose. It was more troublesome to administer and many assumed that its action was the same. Experience indicated otherwise, Dr. Savage said: of the first 49 patients he had treated with corticotrophin, no less than 11 had stopped treatment because they seemed to be in remission. In contrast, only 2 out of 50 patients treated with cortisone were able to stop. All patients in both treatment groups were severely affected at the start of treatment and had failed to respond to bed rest, salicylates, phenylbutazone, and gold. Allocation to one or the other hormone treatment was not at random, but there was no obvious source of bias. He had studied more closely another 21 patients receiving corticotrophin and had made regular measurements of sedimentation-rate, joint tenderness, strength of grip, and 24-hour urinary 17-hydrocorticosteroid (17-OH.C.S.) output. After at least six months' study 5 patients had had remissions of four months or more, and no longer needed corticotrophin. The doses used in the patients who improved were those that produced an early fall of the sedimentation-rate to normal. Apart from this there were no features which convincingly separated the patients whose disease remitted from those who continued to require treatment. This work is being done with the aid of the Dan Mason Foundation of the West London Hospital Medical School.

Dr. A. J. POPERT discussed patients who had had an operation while receiving corticotrophin. The normal rise in urinary excretion of 17-OH.C.S. appeared to be abolished or delayed. Dr. P. S. DAVIS had noted that whereas a dose of corticotrophin which produced a satisfactory clinical response was usually reflected in a significant rise in urinary 17-OH.C.S. excretion, there was, in some patients, a dissociation of these effects.

The charts shown all illustrated the many sources of variation in this type of study, and Prof. F. T. G. PRUNTY, speaking of factors influencing the response of the human adrenal cortex to corticotrophin, emphasised this point. Corticotrophin stimulation of the adrenal glands "built up" slowly in some normal individuals on a fixed daily dose, although excess steroid output fell to normal levels immediately corticotrophin was stopped. Some hirsute individuals showed a qualitatively different pattern of steroid excretion. Hypopituitary patients might not respond in full to corticotrophin until triiodothyronine was also given. A given amount of corticotrophin was more effective in two divided doses than as a single injection. Intramuscular inactivation of corticotrophin occurred and might increase as time went on. Add to this, wide day-to-day variations in normal response to corticotrophin, 10- or 20-fold variation in the potency of various corticotrophin preparations, and unknown variation in the severity of the disease, and it became clear that great care was necessary before any conclusions could be drawn from measurements of 17-OH.C.S. excretion. The meeting agreed that if the promised superiority of corticotrophin over cortisone were to be understood and exploited more reliable therapeutic standardisation of corticotrophin was urgently needed.

Research and the Rheumatic Diseases

Dr. WALTER BAUER, professor of medicine at Harvard Medical School, took this theme for his Heberden oration. Twenty-seven years ago, when his arthritis group first began at the Massachusetts General Hospital, the primary aim had been to frame a comprehensive account of the rheumatic diseases, especially rheumatoid arthritis, and their natural course and variation. 300 patients with rheumatoid arthritis selected for special study had been followed over twenty-five years, giving a unique experience. It had been found that onset in one joint before the age of 40 often meant a remittent disease and a good prognosis. In contrast two to five years' continuous disease was only rarely, though significantly, followed by a major remission. The majority of patients whose disease was variable showed seasonal changes, often running true to type for each patient. There seemed to be a constant peak in the remission-rate about May: in contrast, there was a significant tendency for the disease to begin or relapse about March. Altogether 80 out of 300 patients had had considerable remissions before admission to the study. This work had enabled them to know the range of abarticular rheumatoid disease and to distinguish it from secondary complications. Rest emerged as the keystone of treatment, and the definite natural tendency for the disease to remit cast doubts on the many reported "cures."

Nevertheless, despite these and many other advances in knowledge, no significant lead had emerged as to cause or cure—an impasse which faced all investigators of this disease. Progress must now await more fundamental advances in knowledge of basic tissue processes. Thus Dr. Bauer reached his main theme, a plea for the new philosophy of rheumatism research, where fundamental and clinical investigators could work in close and fruitful contact, on terms of equality, with the laboratories near the wards and both planned and casual interchange of ideas made easy. He illustrated this approach from

his own unit. From their studies on the physiology of articular cartilage, conducted mainly by clinical investigators, the study of tissue components had now grown to include basic studies by non-clinical research-workers on the fibrous proteins, particularly collagen, and on the glycoproteins and other non-collagenous parts of the connective tissue. Though there was no convincing evidence for the primary involvement of collagen in the so-called "collagen diseases," studies of this material, aided by the ability with which it could be followed by its unique structural and chemical "finger prints," had given new knowledge of its part in growth and metabolism and in diseases such as scurvy. This included the demonstration that the amount of neutral soluble collagen present in a tissue could be correlated with its growth-rate, and showed the way to future in-vitro work on the factors affecting the precipitation of collagen in the extracellular spaces—of obvious importance in the sclerosing and scarring processes so often encountered in sick patients. From the experiments on polysaccharides there had already come a general scheme for the analysis of the sugar-containing substances of the body, based on methylation and dehydration, by comparing the isolated degradation products with a unique "library" of synthesised methylated sugars. Other results had included the analysis of an almost pure amyloid substance, the purification and study of the plasma glycoproteins and their pharmacology, the enzymology of the amino sugars, and the study of L forms of bacteria, bearing in mind the possible but as yet unproved relationship of these organisms to human articular disease.

It was in this atmosphere that a new type of medical investigator was being trained, familiar with human disease, yet able to speak both the language of the ward and of the laboratory, and to see how the results of free inquiry into the biological sciences could apply to the problems of disease. Such people held the key to future progress.

Reviews of Books

British Social Work in the Nineteenth Century

A. F. YOUNG and E. T. ASHTON. London: Routledge & Kegan Paul. 1956. Pp. 264. 25*s*.

THIS book spotlights the actions of progressive men and women against the sombre backcloth of Victorian Britain. The glimpses are fleeting, but there is time to see each character's method of approach, sometimes to sense the driving force, and always to appreciate what was left behind as the cavalcade passed on.

The first part examines the ideas which influenced the development of social work and pillories the failures and shortcomings of the poor-law system in trying to meet the difficulties of the times. But it is our tradition to adapt social legislation rather hesitantly, and the Elizabethan machinery was bound to creak by the 1830s.

Running through vivid descriptions of the social conditions of the poor is a critical appraisal of the religious and philosophical thought of the century, when the greatest good of the greatest number seemed to be to allow each man to seek his own good in his own way. The climate of the 19th century may seem chilly to us, sitting in the summer of the 20th, with the sunshine of full employment and central grants-in-aid, and we may pay less than due credit to those Victorians who strove, each in his or her own way, to seek the good of others. This book is a timely reminder of our debt.

The second part is a stream of information about those pioneers. How Agnes Jones started the proper nursing of the workhouse sick; how Louisa Twining's visits to the general workhouse paupers stimulated THE LANCET's inquiry of 1866; how Chalmers encouraged self-help amongst the Glasgow poor; how Octavia Hill worked for better housing, and Dr. Barnardo for deprived children; how Hannah More set up her Sunday Schools, John Pound the ragged schools, and Canon Barnett and Arnold Toynbee the university settlements in the slums.

Our own contemporary problems of moral welfare are emphasised by the work of Elizabeth Fry in the prisons, and Mary Carpenter in juvenile delinquency, the campaigns of Josephine Butler, William Booth, and Wilson Carlisle against prostitution and vice. We still have many gutters to sweep. We think we know the cost of our Welfare State, we wonder how we can control it; our industrial economy fights for export markets abroad while inflation continues at home. History seems to enter a caveat. We may need to study again the problems of the 19th century. This book helps to show us how.

Human Ovulation and Fertility

E. J. FARRIS, PH.D., executive member, The Wistar Institute of Anatomy, Philadelphia. London: Pitman Medical Publishing Co. 1956. Pp. 159. 50*s*.

A GREAT deal of work is presented here on the methods available for fixing the day of ovulation in the human menstrual cycle, and Dr. Farris discusses the clinical uses of this information in promoting or preventing conception.

His work on the activity of female rats in œstrus suggested a study of walking activity in women—paralleled by the observation of bursts of energy in otherwise apathetic laboratory technicians. Temperature and surgical and hormonal data—particularly the results of his rat-hyperæmia test—are compared with clinical results from single natural or artificial inseminations. In general, the scheme of management which Dr. Farris recommends for female infertility seems as likely as any to provide the trial period within which those who are going to conceive will do so. As a contraceptive measure, his calculation of the safe period, it is claimed, would reduce the failure-rate of the Ogino-Knaus method: from his findings, however, a high frequency of ejaculation in the male seems to be a far more reliable contraceptive.

There is much in the book of interest to biologists and to those concerned in the management of infertility, though the use of pituitary, and possibly ovarian, irradiation seems unjustified even as an experimental technique. Not the least interesting observation is that the duration of pregnancy is significantly longer in young than in old primiparæ. The book is well and clearly produced.

Oral Cancer and Tumours of the Jaws

GEORGE S. SHARP, M.D., F.A.C.S., F.A.C.R., professor of pathology and assistant clinical professor of surgery, School of Dentistry; WELDON K. BULLOCK, M.D., M.SC., associate clinical professor of pathology, School of Medicine; JOHN W. HAZLET, D.D.S., lecturer in oral tumour pathology, School of Dentistry, University of Southern California. New York, Toronto, and London: McGraw-Hill. 1956. Pp. 561. £5 12*s*. 6*d*.

THIS interesting book is principally concerned with the clinical diagnosis, by direct examination and by radiography, of tumours within the sphere of action of the oral surgeon. Pathology, treatment, and prognosis are also considered, but much more briefly. The two nearly equal halves of the book are treated somewhat differently.

The first is chiefly occupied by a series of descriptions of cancer of each of the regions of the mouth. In each region the clinical appearances and local peculiarities of squamous carcinoma are described in detail and lavishly illustrated. This is very well done. Other tumours are considered, however, chiefly as elements in the differential diagnosis of squamous carcinoma in each region, somewhat inadequately and with some repetition in consequence.

The second half deals with tumours, quasi-tumours, and cysts of the jaws: it is at once more conventional and better balanced than the first, dealing with each tumour separately rather than by regions. The book would have been much improved if the angiomas, granulomas, adenomas, and the like had been extracted from the earlier sections (leaving the excellent account of squamous carcinoma and its precursors intact) and treated separately after the manner of the jaw tumours. Curiously enough, in view of the fact that all its

authors are pathologists, the difficulties of histopathological diagnosis are almost disregarded. It is assumed throughout that an adequate biopsy will always give the right answer: the possibility of confusion, say, between osteoclastoma and hyperparathyroid lesions, is not mentioned.

The illustrations are adequate reproductions of excellent and well chosen black-and-white clinical photographs and radiographs (there are no photomicrographs) and must occupy nearly half the space.

This book is easily faulted in detail, but it offers on the whole a very helpful account of an interesting and very difficult group of tumours.

The Rabbit

HARRY V. THOMPSON and ALASTAIR N. WORDEN. London: Collins. 1956. Pp. 240. 16*s*.

IN recent years interesting and valuable work has been done on the damage which the rabbit has done to crops and on its humane control. The authors of this book, one a principal scientific officer of the Ministry of Agriculture and the other an expert on animal nutrition and health, have produced an interesting and well-written summary of the behaviour, physiology, life history, and population ecology of rabbits.

Until recently, they point out, the most serious of the diseases and parasites of the rabbit were probably *Pasteurella pseudotuberculosis* infection and coccidiosis; and infestation of the wild rabbit with the common liver fluke was considered by some to play an important part in maintaining the high incidence of cattle and sheep fascioliasis. With the introduction of myxomatosis into Britain in the late summer of 1953, this virus infection has outstripped all others as a killing disease, and no signs have yet appeared of a host-parasite adjustment.

The book is an interesting blend of field and laboratory observations.

An Introduction to Cybernetics

W. Ross ASHBY, M.A., M.D. Camb., D.P.M., director of research, Barnwood House, Gloucester. London: Chapman & Hall. 1956. Pp. 295. 36*s*.

THE account of Cheyne-Stokes breathing in many textbooks of physiology shows that though the author may know what he is talking about he does not know how to talk about it. The language he needs is that of cybernetics—the general theory of control and communication in any system whether physical or biological. As such a study is necessarily mathematical it will attract some and repel many. Though the book has the admirable qualities of system, clarity, and rigour, it seems unlikely to fulfil its aim of introducing the subject to biologists previously deterred by mathematical qualms. True it demands no mathematical technique, but the anti-mathematical reader's difficulty is not so much lack of technique as intolerance of the necessary degree of abstraction; and Dr. Ross Ashby's algebraic method emphasises the abstraction, while the analysis of processes into discontinuous states tends to deprive the reader of any help from geometrical intuition. In the long run Dr. Ross Ashby's approach may well prove best for dealing rigorously with grossly non-linear biological systems, but it does not make for easy reading. Although unlikely to make many converts, his book will be read with enjoyment and profit by initiates.

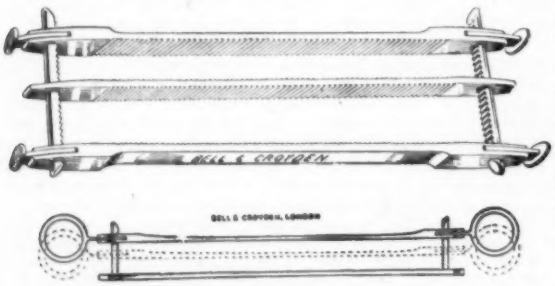
Lectures on the Scientific Basis of Medicine (Vol. IV. 1954–55. University of London: Athlone Press. 1956. Pp. 397. 37*s*. 6*d*.).—Postgraduate students come to this country mainly for clinical studies, and it was an inspiration when the British Postgraduate Medical Federation decided to tell them something about the range of basic laboratory research on which British clinical medicine rests. The physician who is a scholar-biologist will especially enjoy browsing in this fourth volume of lectures. Special mention for successful exposition must be given to Gaddum (alcoholism), Andrewes (viruses), Bergel (tumours), Squire (hypersensitivity), Platt (malnutrition), Frazer (fats), and Gray (porphyrins). Other chapters, such as that by Davidson on nucleoproteins, demand more concentration, but the reader will be rewarded by a fascinating glimpse of the chemical basis of genetics and of a biochemical approach to bacterial growth.

Postural Drainage (London: Lloyd Luke.)—The author of this book, which was reviewed in our columns last week, is E. Winifred Thacker, M.C.S.P., superintendent physiotherapist, Harefield Hospital.

New Inventions

A NEW TWIN INTESTINAL CLAMP

AN efficient stomach or intestinal clamp exerts an equal pressure across the whole loop of intestine involved, and this could not be achieved by the "bow-handle" type of clamp which was in common use until a new type



of stomach clamp was described, in which true parallel action of the blades was obtained.[1]

The "parallel action" principle has now been applied to a twin clamp, which is here described and illustrated.

The clamp consists of three parts. A fixed central blade has "through posts" permitting the two mobile blades to operate in each plane. The two through posts have ratchet teeth on the inner surface with which the spring controlled ratchet-locks on the mobile blades engage, thus fixing them automatically in any position. Attached to each lock is a finger-plate lying in the same plane as the blade and beyond its ends. The finger-plates are controlled by springs of 'Staybrite' stainless steel. When the finger-plates are pressed towards each other, the ratchet-locks open and the blades are released.

The clamp may be used for all operations where intestinal anastomosis is necessary, and I have used it constantly during the past four years in operations such as Polyagastrectomy, entero-enterostomy, gastro-enterostomy, and ileocolostomy.

To apply the clamp the two mobile blades are removed. One selected loop of intestine, held by two Babcock forceps, is applied to one side of the fixed blade. The mobile blade on that side is now pressed home by finger pressure. The other selected loop of intestine is dealt with in a like manner. The two loops of intestine are now held side by side and ready for the anastomosis. Pressure on the two loops of intestine is even throughout and therefore not traumatic. For this reason no provision has been made for the blades to be covered by rubber.

The advantages claimed for this clamp are:

(1) Equal and firm pressure, which is not traumatic, is obtained over the whole loop of intestine involved.

(2) The clamp is of light construction and is easily applied and removed.

(3) There are no large handles or other projections to hamper the surgeon.

The clamp may be obtained from Messrs. John Bell & Croyden whom I thank for their great help and interest in the design of this instrument.

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Whipps Cross Hospital, London

1. Joseph, W. E. *Lancet*, 1951, ii, 1121.

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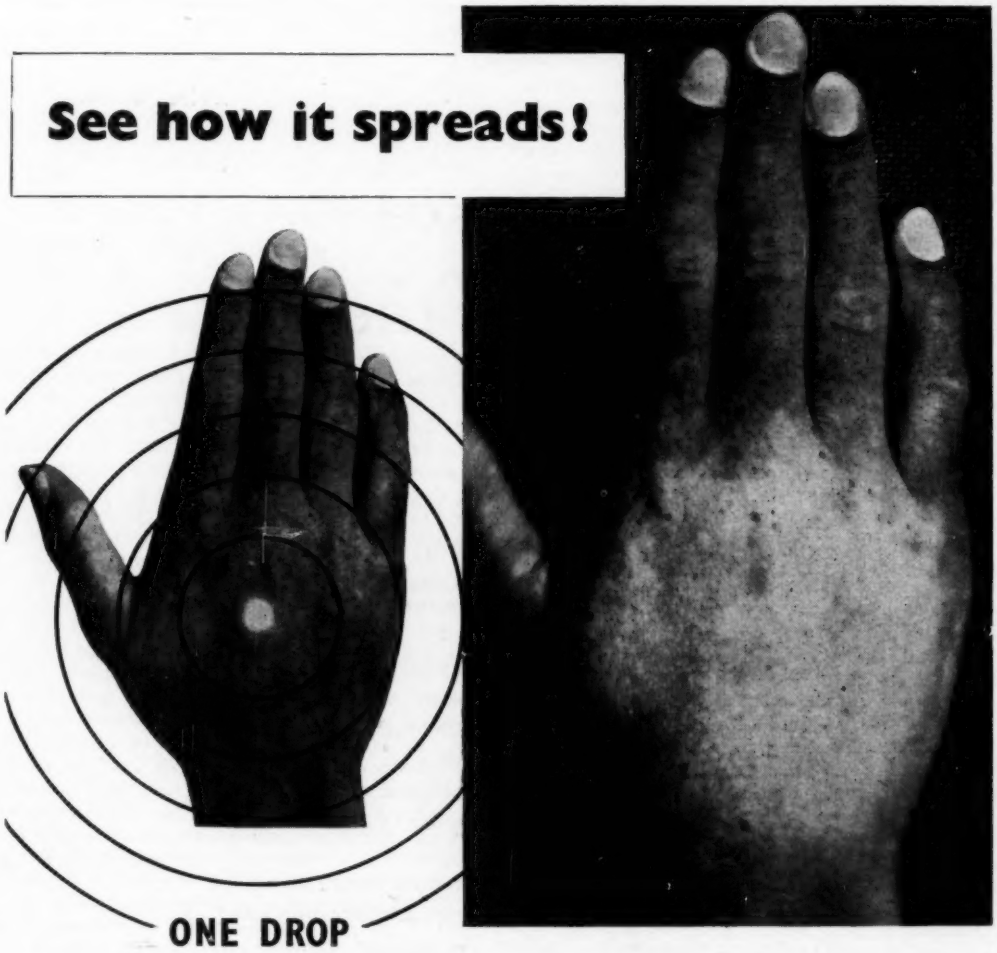

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PETER HANSELL, M.R.C.S., F.R.P.S.

With a foreword by

SIR STEWART DUKE-ELDER
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J. and A. Churchill Limited, 104 Gloucester Place, London, W.1.

THE LANCET
LONDON: SATURDAY, NOV. 3, 1956

The Extra Shillings

THE Government have suddenly decided that the National Health Service patient, instead of paying a shilling for all the prescriptions written on any one form, shall henceforth pay a shilling for each prescription. This decision, which will be welcomed by neither patient nor doctor, raises many issues of public policy.

Of the possible consequences, only the direct financial one can be clearly foreseen: since there is unlikely to be any big general reduction in the use made of the service, the Exchequer stands to gain about £5 million which it will raise from patients. With this new addition, charges will have quite a substantial rôle in the finances of the National Health Service: if we include receipts from pay-beds, they will be paying for about 6% of the gross cost—a figure approaching the contribution from the National Insurance fund, which was about 8% in the last year for which we have figures. Given that some further reduction in national spending is required, it is by no means clear why this should be made by the sick consumer rather than the healthy consumer. To give one example of possible alternatives, an additional halfpenny tax on a packet of 20 cigarettes would bring in more revenue than this extension of the prescription charge. There seems, however, to be a tradition in Whitehall, stronger than government itself, that in times of economy every department must pay a share. Yet even if this tradition has to be respected, and an economy of £5 million has to be made at the expense of patients in need of medicine, there is still room for doubt about whether this revenue is to be raised in the wisest way. Though the present plan will not much reduce the total demand for medical care, it may well deter some sizable, and perhaps medically important, minority from visiting their doctor or from taking his prescriptions to the pharmacist. Perhaps a general increase in the charge for each prescription form, or some system of differentiation, would be preferable. We can only hope that these other solutions have been carefully considered by the Minister of Health.

But, however careful the Minister's consideration may be, has he the facts on which alone this charge can be justified? For a proper decision either on the form of the charge or on whether those ill at home should contribute to the economic crisis at all, much more, surely, needs to be known about the use made of the pharmaceutical service. Can anyone do more than guess about the wider social effects either of prescription charges in general or of this extension? The few general statements that can be made fairly safely are by no means reassuring. First, more of this new levy will be paid by the average woman than the average man. Secondly, the average aged person will pay about half as much again as the younger person. Thirdly, this is a tax which, owing to sheer numbers, will bear much more heavily on the family man than the individual wage-earner. Since in nearly every respect this measure discriminates against dependants, it contradicts other measures of social policy. To raise the £5 million, it might even be preferable to reduce pensions, family allowances, and tax concessions for dependants; for this would at least affect all dependants and not only those dependants who are already causing the extra financial demands involved in sickness at home. Beyond these broad statements, we can do little more than speculate. In most practices there seems to be a hard core of "regulars," and on these patients the extended charges will fall heaviest. The treatment of some of them will not be threatened by the extended charge, but there are others whose care at home rather than in hospital depends on a regular battery of pharmaceutical support. It would indeed be unfortunate if this measure, by discouraging such patients from treatment, had the effect of adding to present or future demands on the hospital services. To assume that all hardship will be automatically eliminated by allowing refund through the National Assistance Board would, of course, be naïve. It is one thing to provide an administrative apparatus but another to ensure it is used. As a necessary condition for claiming the refund, the patient must disclose to the pharmacist that he is an applicant for Assistance, and some may hesitate on this account. It is not known, moreover, how many of the feeble and bedridden, of the aged and confused, have tried to get a refund of the existing shilling charge. At the borderline of "subsistence" there are many thousands of persons who may be unwilling to set in motion the cumbrous and unwelcome process of an Assistance application each time they pay a prescription charge. And, incidentally, the administrative cost to the Exchequer of handling one Assistance application must amount to many shillings more than can be earned from the most generous prescription form.

Many of the fears expressed about this added levy may prove to be unfounded. But if there is insufficient evidence to prove that there will be any serious medical repercussions, there is also no evidence to prove that there will not. And this is something for which the Government are themselves responsible. There are occasions when authority must take the risk of acting with imperfect knowledge of the consequences; but in this case the Government have, by their previous economies, made administrative action more rather than less of a gamble, by reducing the information available about prescribing behaviour. In his last Budget speech, the Chancellor of the Exchequer recognised the need for more knowledge about business behaviour to assist in the formation of economic policies; but he seems prepared to take decisions in the health service without any study of behaviour of patients. If their value is otherwise negative, the new charges do at least underline the need for research into the use made of the pharmaceutical services.

The Clearing System for Blood Fats

IN 1943 HAHN [1] found that injected heparin clears the cloudiness seen in the plasma after absorption of a fatty meal. This observation got little attention until some five years later, when there was general recognition that coronary-artery disease is usually associated with abnormalities in the lipids of the blood. From investigations in several countries it is now known that a very complex system exists for dealing with alimentary lipæmia, and heparin may be part of the physiological mechanism. The epidemiological and biochemical findings [2] are consistent with the view that disturbance of this clearing system may be an important factor in the origin of coronary-artery disease.

In the Sir William Dunn School of Pathology at Oxford the clearing system has been studied in relation to the problem of how fat, which enters the blood as visible particles or chylomicra, could be changed to a more readily diffusible form before leaving the circulation. In the technique used by FRENCH, ROBINSON, and FLOREY [3] chyle is collected from the thoracic duct of rats during alimentary absorption and the changes which occur when this chyle is added to plasma under varying conditions are determined. When heparin is injected intravenously, or when blood containing heparin is perfused through an isolated hind limb, through the lungs, or through the abdominal viscera, the plasma obtained has the ability to clear chyle added in vitro. Perfusion of blood containing heparin through the liver does not give rise to clearing activity, and indeed the liver will destroy any activity present in the perfusate.[4] The rate of clearing depends on the concentration in plasma of a factor formed when heparin is injected. On the other hand, the extent to which lipids are cleared by plasma is determined by the quantity of plasma-albumin. ROBINSON and FRENCH [5] demonstrated that, after clearing, the lipid which has become soluble can be recovered quantitatively from the albumin fraction in the form of fatty acids, one molecule of albumin being responsible on average—in their in-vitro system—for about six molecules of fatty acid. The recovery of the added fat in the form of free fatty acid indicated that lipolysis was an essential component of the clearing reaction, and the work in Oxford and elsewhere has supported the view that the clearing factor is in fact a lipase which is specially adapted to attack the chylomicra.[6 7] These particles consist predominantly of triglycerides but also contain some phospholipid and cholesterol. The phospholipid is present as a surface layer which apparently ensures the stability of the particles and may protect them from attack by other lipases.[8] The cholesterol in the chylomicra does not appear to be concerned directly in the clearing reaction. The plasma of rabbits receiving cholesterol by mouth has been found to contain chylomicra with a relatively high content of cholesterol [9]; these particles are relatively resistant to the clearing system in heparinised plasma; and their resistance, apparently, is not due to failure in hydrolysis of the constituent triglycerides but to the inability of clearing factor to change the cholesterol-containing residue remaining after hydrolysis has occurred. A later paper, however, recorded that in the rat the clearing of chyle by heparinised plasma permits the subsequent clearing of turbid suspensions of cholesterol.[10] This secondary clearing was attributed to solution of the cholesterol in the fatty-acid/protein complexes formed during the clearing of chyle.

The rôle of heparin in the clearing system is still obscure. Besides activating the system (with a latent period of less than $1^1/_2$ minutes [11]), heparin has also been shown to stabilise it. ROBINSON [12] found that when rats have received heparin by injection it can be removed from their plasma by passing this through a column of strong anion exchange resin. The clearing activity of the effluent was destroyed very quickly by incubation at 37°C, but the addition of minute quantities of heparin (less than 0·25 μg. per ml.) prevented this destruction. The significance of this protective function of heparin, demonstrated in vitro, on the clearing of plasma in vivo cannot yet be determined.

The changes in distribution of plasma fat brought about by the clearing reaction facilitate the removal of fat from the blood,[13 14] but it is still uncertain how the clearing reaction is brought into play under physiological conditions and whether the clearing factor acts normally in the blood or the fat depots. JEFFRIES [15] found that during the absorption of olive oil in the rat there was a transient development of clearing activity in the plasma. When rats were on a fat-free diet, their plasma was completely without effect. ROBINSON, JEFFRIES, and FRENCH [16] compared the clearing activity present in rat plasma after a fatty meal and after intravenous heparin, and showed that the two clearing systems respond similarly to changes of temperature and pH, and to inhibitors such as triton derivatives, sodium tauroglycocholate, and protamine. In both systems, as the clearing of chyle proceeds, fatty acid is released and a soluble fatty-acid/albumin complex forms in the plasma. Indeed, there was no evidence that the heparin-induced system was not identical with the system arising from the physiological stimulus. A further factor possibly linking the two systems, and indicating that some hydrolysis of chylomicra takes place in the circulation, is the finding that in man after a fatty meal there is a rise in free fatty acid in the blood.[17]

The relation of the lipid clearing system to the blood-coagulation mechanism is of absorbing interest. In 1936 TREVAN and MACFARLANE [18] showed that when a crude lecithin preparation was added to a mixture of recalcified citrated plasma and Russell's viper venom it accelerated clotting. POOLE, ROBINSON, and MACFARLANE [19] have now ascertained that this

1. Hahn, P. F. *Science*, 1943, **98**, 19.
2. *Lancet*, 1955, ii, 1123; *Ibid*, 1956, i, 556.
3. French, J. E., Robinson, D. S., Florey, H. W. *Quart. J. exp. Physiol.* 1953, **38**, 101.
4. Jeffries, G. H. *Ibid*, 1954, **39**, 261.
5. Robinson, D. S., French, J. E. *Ibid*, 1953, **38**, 233.
6. Shore, B., Nichols, A. V., Freeman, N. K. *Proc. Soc. exp. Biol., N.Y.* 1953, **83**, 216.
7. Korn, E. D. *J. biol. Chem.* 1955, **215**, 15.
8. Robinson, D. S. *Quart. J. exp. Physiol.* 1955, **40**, 112.
9. French, J. E., Robinson, D. S., Harris, P. M. *Ibid*, p. 320.
10. Robinson, D. S., Harris, P. M., French, J. E. *Ibid*, 1956, **41**, 309.
11. Robinson, D. S., Jeffries, G. H., Poole, J. C. F. *Ibid*, 1955, **40**, 297.
12. Robinson, D. S. *Ibid*, 1956, **41**, 195.
13. Brown, W. D. *Ibid*, 1952, **37**, 215.
14. Grossman, M. I., Palm, L., Becker, G. B., Moeller, H. C. *Proc. Soc. exp. Biol., N.Y.* 1954, **87**, 312.
15. Jeffries, G. H. *Quart. J. exp. Physiol.* 1954, **39**, 77.
16. Robinson, D. S., Jeffries, G. H., French, J. E. *Ibid*, p. 165.
17. Robinson, D. S., Harris, P. M., Poole, J. C. F., Jeffries, G. H. *Biochem. J.* 1955, **60**, xxxvii.
18. Trevan, J. W., Macfarlane, R. G. Annual Report of the Medical Research Council for 1936; p. 143.
19. Poole, J. C. F., Robinson, D. S., Macfarlane, R. G. *Quart. J. exp. Physiol.* 1955, **40**, 276.

acceleration is not due to the lecithin itself. POOLE and ROBINSON [20 21] showed that ethanolamine phosphatide (which has the same chemical constitution as lecithin, except that the amino-alcohol ethanolamine replaces the choline in the molecule) has the same action as the crude lecithin preparations on this blood-clotting system. Rat chylomicra also accelerated the clotting. Both chylomicra and ethanolamine phosphatide (prepared from brain) greatly increase, in an apparently similar manner, the formation of thrombin in the coagulation system; and acid hydrolysates of rat chyle contain a substance resembling ethanolamine in its ionophoretic and chromatographic behaviour. In a subsequent paper [22] the effects, on thrombin formation, of ethanolamine phosphatide prepared synthetically are compared quantitatively with the effects of ethanolamine phosphatide prepared from brain and egg-yolk. The results leave little doubt that ethanolamine phosphatide itself is responsible for the enhanced rate of thrombin formation, no activity being shown by the related serine and inositol phosphatides. It has been known for some time that, in man, a fatty meal promotes blood-coagulation,[23] and O'BRIEN [24] has lately shown that this shortening of the clotting-time is probably mainly due to an increase in ethanolamine phosphatide: indeed, he has attempted assessment of the "phosphatidyl equivalent" of plasma after different types of meal. BARKHAN, NEWLANDS, and WILD [25] have examined the effects of chemical fractions of human brain tissue (containing phospholipid material) on coagulation systems. One such fraction, which was probably phosphatidyl ethanolamine, was an accelerator, but another was an inhibitor. The latter was, they thought, phosphatidyl serine; and in ascribing an inhibitory effect to this substance they seem to differ from the Oxford workers. MACLAGAN and BILLIMORIA [26] have shown that, during alimentary absorption of fat in man, clotting-time may be greatly reduced. Whereas butter had a powerful action, margarine had very little; yet the two fats produced plasma turbidity of the same order. They suggest that the acceleration of clotting is not entirely due to chylomicra as such, but to a closely related group of phospholipids abundant in milk and milk products.

The full implications of these exciting facts are of course still far from clear, and the problem is being studied in many different laboratories. The Oxford investigators have described some of the components of the system which may be responsible for the removal of chylomicron-fat from the circulation, but they are scrupulously careful to avoid the assumption that what happens in experiments in vitro necessarily happens also in the body. Nevertheless the links between blood-coagulation and the disturbances in fat transport known to exist in coronary-artery disease give us reason to hope that they are elucidating the essential chemical pathology of this disorder. Once this is understood, rational preventive measures may be practicable.

20. Poole, J. C. F., Robinson, D. S. *Ibid*, 1956, **41**, 31.
21. Robinson, D. S., Poole, J. C. F. *Ibid*, p. 36.
22. Poole, J. C. F., Robinson, D. S. *Ibid*, p. 295.
23. Fullerton, H. W., Davie, W. J. A., Anastasopoulos, G. *Brit. med. J.* 1953, ii, 250.
24. O'Brien, J. R. *Lancet*, Aug. 4, 1956, p. 232.
25. Barkhan, P., Newlands, M. J., Wild, F. *Ibid*, p. 234.
26. Maclagan, N. F., Billimoria, J. D. *Ibid*, p. 235.

Arterial Necrosis Following Resection of Coarctation of the Aorta

To the pathologist, focal arterial necrosis is an interesting lesion, partly because of its association with a considerable number of rare and apparently unrelated diseases of unknown origin, but mainly because in hypertension its presence enables him to say that the disease has entered the malignant phase. Though its pathogenesis is not yet entirely clear, there is some evidence [1 2] that it is related to arterial spasm; and the fact that necrosis is never seen in the vessels of a kidney whose renal artery has been constricted by a Goldblatt clamp [3 4] has persuaded most students that in hypertensive disease it is a direct local result of excessive intra-arterial tension. In normal rats, it has been provoked by brief overdistension of the arterial tree with saline.[5]

If this simple explanation of arterial necrosis is correct, the clinician might reasonably expect necrosis to occur whenever arteries (normal or hypoplastic) are suddenly exposed to the full force of a high blood-pressure. These conditions are exactly fulfilled by successful plastic operation for coarctation of the aorta, and much interest therefore attaches to BENSON and SEALY's [6] report of two cases in which gross arterial necrosis did in fact follow this operation.

Their first patient was a man of 22 with a combination of coarctation and aortic incompetence. The intra-arterial pressure in the brachial and femoral arteries was 240/60 and 90/60 mm. Hg respectively. After resection of the coarctation the brachial pressure remained high (190/80) and strong pulsation was felt in the femoral arteries. On the third postoperative day the patient complained of severe abdominal pain and this was later found to be due to infarction of most of the small intestine. Post mortem, evidence of hæmorrhage and necrosis was also found in the stomach, liver, and kidney. But the most striking change was widespread acute necrosis of the arterial system distal to the coarctation, including the intercostal, splenic, renal, mesenteric, and gastric arteries, and even the common iliac arteries and the aorta. The necrosis was mostly in the plain muscle of the media and there was little cellular reaction.

Their second patient was a 4-year-old child whose brachial and femoral blood-pressures were 150/80 and 98/65 mm. Hg respectively. After operation the brachial pressure remained unchanged but the femoral rose to 225/180. Here again acute abdominal symptoms appeared, and 24 inches of gangrenous ileum was resected. The child recovered from the second operation and seemed well two months later. Extensive medial necrosis was found in the arteries of the excised loop of intestine.

BENSON and SEALY refer to three other cases in the recent literature and point out that less severe examples of the complication have probably been overlooked. In this connection it is noteworthy that in their report a few weeks ago on forty cases of coarctation treated surgically CLELAND et al.[7] say that "in five cases abdominal pain in the postoperative period was severe enough to cause concern."

These cases are important for two reasons. As the clinical counterpart of the experimental evidence we have mentioned, they provide strong support for the current view that hypertensive arterial necrosis is a

1. Ellis, A. W. M. *Arch. intern. Med.* 1949, **84**, 159.
2. Byrom, F. B. *Lancet*, 1954, ii, 201.
3. Wilson, C., Pickering, G. W. *Clin. Sci.* 1938, **3**, 343.
4. Goldblatt, H. F. *J. exp. Med.* 1938, **67**, 809.
5. Byrom, F. B., Dodson, L. F. *J. Path. Bact.* 1948, **60**, 357.
6. Benson, W. R., Sealy, W. C. *Lab. Invest.* 1956, **5**, 360.
7. Cleland, W. P., Counihan, T. B., Goodwin, J. F., Steiner, R. E. *Brit. med. J.* Aug. 18, 1956, p. 379.

direct result of excessive filling tension. At the same time they raise the question of what steps should be taken to prevent this complication in future. The occurrence of arterial necrosis, and its extent, presumably depend on how high and how abruptly the pressure rises in the distal vessels when the obstruction is relieved, and on how long the high pressure persists. Exact information on the relative weight of these three factors is not available, but the experimental evidence shows that sudden exposure to a sufficiently high filling tension may cause irreparable damage almost immediately. Presumably, therefore, in order to avoid this potentially disastrous complication, the blood-pressure will need to be carefully controlled by hypertensive drugs before and during the operation and perhaps for some considerable time afterwards.

Annotations

THE POSTGRADUATE SCHOOL COMES OF AGE

SINCE it was opened in 1935, over 12,000 students have attended the Postgraduate Medical School of London, 2000 of them coming from outside the Commonwealth. Known originally as the British Postgraduate Medical School, and a school of London University, it has from the first been associated with the Hammersmith Hospital, which until 1948 was administered by the London County Council. The British Postgraduate Medical Federation was formed at the end of the war, and the teaching organisations in the subspecialties, such as ophthalmology, neurology, and laryngology, already established at appropriate hospitals in London, combined as the constituent institutes of the Federation.

As usual in the history of knowledge, research and teaching go hand in hand, and the outstanding work of the staff of the school is known all over the world. It is difficult, and perhaps unfair, to single out examples of the very many investigations undertaken, but mention must be made of the pioneer work at the school on cardiac catheterisation and liver biopsy, and the studies of cardiac output, pulmonary hypertension, mitral-valve surgery, and the neurological complications of hepatic disease. Plasma-proteins, phosphatases, hæmolytic and megaloblastic anæmias, peripheral arterial disease, and bacterial genetics are among the special interests of the department of pathology and bacteriology; and very recent experiments in the production of an effective staphylococcal vaccine are especially interesting in view of the increasing resistance of staphylococci to antibiotics. Work on the crush syndrome and the treatment of anuria has led to the saving of many lives, and the school has also led the way in œsophageal surgery. Other diverse and useful research has included evaluation of the drug treatment of high blood-pressure and tuberculosis, and statistical studies of the relationship between the ABO blood-groups and disease.

The law of diminishing returns applies to the cost of research. The medical explorer of today is less likely than his forerunners to make his discoveries by simple clinical observation and experiment alone, and depends more and more on such expensive tools as radio-isotopes and the devices which measure them. For such work new and bigger laboratories are needed, and in their annual reports the departments of surgery and pathology of the Postgraduate Medical School both complain of having too little space. The school was built at a time when money was very scarce and it needs better classroom and library accommodation. The committee of management therefore now hope to complete the school—at an estimated cost of £750,000—and their appeal brochure includes an architect's drawing of the buildings proposed, which comprise lecture-theatres and common-rooms, joined by a bridge to a 9-storey block of laboratories with a library. Unlike the famous undergraduate schools, the Postgraduate Medical School has neither endowments nor subscribers, and depends chiefly on a grant from London University, only 3% of its funds being derived from students' fees. No capital is to hand for new buildings, and an appeal to raise the required sum is launched this week. All who have learnt from the work done at Hammersmith, and all who have been helped by it, have reason to lend their aid.

NEPHROSIS AND RENAL-VEIN THROMBOSIS

A FEW years ago the "nephrotic syndrome" was debatable territory; some thought that it usually meant nephritis in the sense of Ellis's type II, or a late subacute development of type I, while others held that it was a disorder *sui generis*, the genuine nephrosis of Volhard and Fahr.[1] It was realised that recovery was occasionally possible, especially in children, and some claims were made that cortisone might promote recovery[2]; in fact, investigations of the response to cortisone and corticotrophin (A.C.T.H.) still continue.

A detailed study of the nephrotic syndrome has shown that it is far from uniform in its pathogenesis. The work of Squire[3] has reinforced the older view of Epstein[4] that excessive urinary protein loss is the common factor which sets off the train of events towards a nephrotic syndrome. Excessive proteinuria and a clinical and biochemical picture of nephrosis are the result of glomerular lesions in (1) glomerulonephritis, (2) diabetic intercapillary glomerulosclerosis (Kimmelstiel-Wilson lesion), (3) amyloid disease, (4) the "wire-loop" lesions of disseminated lupus erythematosus, and (5) trimethadione and inorganic mercury intoxication. In addition, Pollak and his associates[5] have shown by biopsy that there is a reversible glomerular lesion in the albuminuric œdema of pregnancy (eclampsia). It is even possible to extend the definition further to include protein loss from the prolonged venous congestion of constrictive pericarditis and other forms of chronic heart-failure.[3] Though at this point the borderland with other syndromes of œdema becomes blurred, this functional physiological approach to the problem is of much more than academic interest. The treatment given by Rosenheim and Spencer[6] at University College Hospital (dietetic measures to maintain a positive nitrogen balance, the removal of œdema by low-sodium diet, and the oral administration of resins) led to a gratifying disappearance of all nephrotic manifestations in 6 out of 13 patients.

Harrison et al.[7] discuss renal-vein thrombosis as a cause of the nephrotic syndrome, of which it may reproduce all the clinical and biochemical features.[8] Under conservative treatment, the occluded veins may recanalise or capsular collaterals develop, with apparent recovery, though renal function remains slightly impaired. Thrombosis of the renal vein is usually a complication of thrombosis of the inferior vena cava—either from upward extension from the leg veins, or in association with invasion of the vena cava by hypernephroma or by malignant cœliac glands. Another type is renal-*venule* thrombosis which can complicate nephritis or amyloid nephrosis, producing sudden deterioration of renal func-

1. Volhard, F., Fahr, T. Die Brightsche Nierenkrankheit. Berlin, 1914.
2. Luetscher, J. *J. clin. Invest.* 1950, **29**, 1576.
3. Squire, J. R. *Brit. med. J.* 1953, ii, 1389.
4. Epstein, A. A. *J. exp. Med.* 1914, **20**, 334.
5. Pollak, V. E., Pirani, C. L., Kark, R. M., Muehrcke, R. C., Vincent, C. F., Nettles, J. B. *Lancet*, July 14, 1956, p. 59.
6. Rosenheim, M. L., Spencer, A. G. *Ibid*, Aug. 18, 1956, p. 313.
7. Harrison, C. V., Milne, M. D., Steiner, R. E. *Quart. J. Med.* 1956, **25**, 285.
8. Blainey, J. D., Hardwicke, J., Whitfield, A. G. W. *Lancet*, 1954, ii, 1208.

tion with oliguria in a pre-existing nephritic or even nephrotic syndrome. In one instance of renal-vein thrombosis, malignant hypertension supervened.

The clinical recognition of these syndromes is a matter of the greatest interest, which throws new light on various manifestations of renal disease. The diagnosis can often be clinched by retrograde venography of the renal veins —a technique described by Harrison et al. Renal venography is indicated when there are collateral abdominal veins with upward blood-flow; and also when unexplained œdema of the legs or lower trunk is associated with proteinuria of too mild a degree to produce a typical nephrotic syndrome. Recent pulmonary infarction may also suggest the use of renal venography if the source of embolus is not clinically obvious. Recent thrombi in the renal veins or the inferior vena cava are extremely liable to give rise to showers of emboli and recurrent pulmonary infarction. Unexplained proteinuria in patients known to be suffering from malignant disease also raises the suspicion of renal-vein obstruction. Obstruction may be caused by direct pressure of the growth on the upper cava, or it may be secondary to venous thrombosis, which is a familiar complication of malignant disease. Renal-vein thrombosis without involvement of the cava is more likely to be clinically significant in patients with a single kidney; coincident bilateral thrombosis of the renal veins is obviously less likely than thrombosis of a single renal vein. The nephrotic syndrome appearing for the first time in elderly patients may be another indication for renal venography: unnecessary operations may be avoided by the demonstration of caval obstruction from secondary deposits.

INVESTIGATIONS FOR PRACTITIONERS

NOT long ago misgivings were expressed at the proposal that general practitioners be given direct access to the pathological laboratories and X-ray departments of the hospitals. These departments, it was said, would soon be swamped by requests for investigations and films. The wrong tests would be asked for, samples would be wrongly collected, and reports on them would be misinterpreted by doctors who had become far removed from "real" clinical medicine. Gloom spread through these departments, and the barricades were raised reluctantly.

How far have those fears been realised? Dr. F. N. Marshall,[1] senior administrative medical officer of the Manchester Regional Hospital Board, cites figures for the use of these departments in his area by general practitioners and compares these with those of other users. The unit of measurement is the "standard unit" introduced by the Minister of Health in 1953. By this system routine laboratory tests are evaluated in terms of time, one "unit" equalling 10 minutes. The radiological "unit" takes into account the time of the radiologist and the radiographer as well as the cost of materials.

In terms of standard units the total work of the laboratories increased by 19% during 1955, but the general practitioners made no contribution to this. In fact the work done on behalf of general practitioners decreased from 3·6% in 1954 to 2·9% in 1955. The units of work carried out for general practitioners represented only about a twenty-fifth of that requested by the hospitals in which the departments were situated. In Manchester one or more X-ray departments are "open" to general practitioners in every hospital centre, and in these the story is similar. On average the volume of work carried out on behalf of family doctors was between 10 and 11% of the total work of the departments.

1. Manchester Regional Hospital Board: Abstract of Statistics for 1955.

Opportunity is seldom taken to measure the value of diagnostic procedures to those who request them and the extent to which they do or do not confirm diagnoses made on clinical grounds alone. In the annual report of the Darbishire House Health Centre, Manchester, Dr. H. W. Ashworth compares the number of tests requested with the number reported as abnormal. The tests conducted in the laboratory at Darbishire House are not complex, but are of undoubted value in diagnosis. The proportion in which abnormal findings were reported approached one in three. The centre's X-ray apparatus, a general diagnostic model, is used discriminately but freely by the four doctors at the centre. The 1507 examinations made during the year yielded 301 positive reports.

The proportion of investigations that yield positive results is no certain guide to either economy or efficiency; but in Manchester the opportunity for a comparative study might be taken by investigating a comparable range of laboratory and X-ray investigations, ordered in the outpatient and casualty departments themselves, with regard to the proportion found positive.

COUNTER-IRRITATION IN EPILEPSY

IT has long been known that an epileptic fit can occasionally be aborted by the application of some strong sensory stimulus as soon as the aura of the attack appears. The stimulus is more effective if it is strong and unpleasant and applied to the site involved in the aura. Thus, a focal motor attack in the hand may be altered or abolished by applying a tourniquet to one finger, by gripping the hand hard, or by forcibly moving it against the movement of the spasm. Smelling salts, burning feathers, or other strong and unpleasant odours may also, though rarely, prevent a grand-mal attack, if applied early. Gowers[1] believed that they were most effective when the aura was epigastric or of uncinate type; but he was led away from the sensory aspects of the stimulus by finding that amyl nitrite, with its vasodilator action, was very effective. Thereafter the possibilities of cerebral vasodilatation occupied his attention. Efron[2] has lately had the opportunity to study the way in which an olfactory stimulus modifies grand mal with a long and stereotyped aura. The aura consisted of a march of psychic events, involving a feeling of depersonalisation, the expectation of an odour, then the sudden bursting through of an intense, unpleasant, sweet, penetrating smell as an immediate prelude to loss of consciousness and a grand-mal attack. Efron found that a strong unpleasant odour applied during the period of depersonalisation would modify or prevent the subsequent course of the attack. He proceeded initially on the assumption that competition in cortical pathways accounted for the effect—that the extraneous odour occupied the olfactory sensory cortex and thus prevented the physiological march of the spontaneous attack. Indeed, it was this view that led him to try this method of preventing an attack, since he was at first unaware of Gowers's work on the subject. He found, however, that simple pathway competition such as Gowers had suggested would not explain his findings. He noted, for instance, that the external stimulus was more effective if applied early in the depersonalisation aura, and was in fact ineffective if applied just before the spontaneous smell developed. By the pathway-competition view, this should have been the best timing, since it would be the moment when the cortical march was about to debouch into the olfactory cortical areas. Abnormal spiking in the electro-encephalogram of the uncinate area had already been noted on one

1. Gowers, W. R. Epilepsy and Other Chronic Convulsive Diseases. London, 1881.
2. Efron, R. *Brain*, 1956, **79**, 267.

occasion (suggesting that olfactory mechanisms were then occupied by the discharge), when the external stimulus was still able to modify the attack. Moreover, the feeling of depersonalisation was rapidly reversed by the olfactory stimulus, sometimes before even the "expectation of a smell" had appeared. These observations led Efron to explain the action of the stimulus by some active inhibitory mechanism at cortical level. But the fact that the counter-stimulus must be strong and unpleasant may well point to some action at centrencephalic rather than cortical level. Whatever the interpretation of these findings, they are useful observations made by applying simple physiological principles to clinical investigation in a way that Gowers would certainly have appreciated. Their therapeutic implications will also require consideration.

IN BED OR OUT?

SHOULD feverish children always be put to bed? Generally the question is superfluous, since most of them ask to go there, and quickly fall asleep before passing into the restless miserable stage. In rheumatic fever, diphtheria, and nephritis it would be bold, if not reckless, to try any other course; but it is questionable whether the principle should be extended to all pyrexias, whatever their cause. Gibson [1] often heard mothers say, "When I keep him in his bed he jumps and cries continually. It seems to me he would exert himself less if I let him play in the house"; so he decided to investigate. Of 1082 feverish children, most had respiratory infections, but 14 had scarlatina. All were treated at home, and 471 were kept in bed for three days, while 611 were not put to bed at all, but kept indoors. The results in the two groups were identical and there were no complications.

What conclusion can be drawn from such work? Certainly not the abandonment of bed rest in the treatment of pyrexia; but a reminder that insistence on periods of bed rest for all feverish children may not be in the best interests of mother or child. As a matter of fact, any doctor who pays unexpected visits to his patients' homes knows that many mothers proved this point to their own satisfaction years ago.

CODING FOR CASE-NOTES

THE surest foundation for the publication of clinical results is an efficient system for filing and indexing information obtained from the clinical case-notes. This inevitably calls for coding and translation of facts to punch cards. Until this is undertaken for the basic facts, such as age, sex, diagnosis, and treatment, large series of cases are almost impossible to study with any accuracy from one hospital alone and certainly not on a national scale. The *International Classification of Diseases, Injuries and Causes of Death*, published in 1948, started the ball rolling. A comprehensive index of treatment is more difficult to compile; nevertheless the task has now been achieved for surgery and the allied subjects of radiotherapy and anæsthesia. The *Code of Surgical Operations* [2] is a welcome addition to the *Classification of Diseases*. But how long will it be before it is widely used? This is only the beginning of a much harder task: the education of doctors to appreciate the need to adopt this statistical method; and the education of regional boards and boards of governors to realise the importance of adequate clerical assistance and access to a Hollerith machine. For who is to do the coding? The registrar or house-surgeon, burning the midnight oil, or a clerk? Though the code is a model of clarity, its use by a doctor strange to such tools entails concentration and labour, and is an uneconomic use of his specialised skill. It would be better for each hospital to employ a secretary for the sole purpose of coding, who would soon learn and remember the common code numbers and so save time otherwise spent in continual reference to the code-book. The publication of this valuable code should therefore be a stimulus to both doctors and administrators, for it may well remain useless on the shelf until it is decided who can and who shall do the coding.

1. Gibson, J. P. *J. Pediat.* 1956, **49**, 256.
2. Code of Surgical Operations. H.M. Stationery Office. 1956. Pp. 276. 15*s*.

SMOKING AND BRONCHITIS

HEREDITARY disposition, bacterial infection, allergy, atmospheric pollution, exposure to cold and damp, and cigarettes are some of the things that are thought to contribute to the development of chronic bronchitis. In recent years more attention has been directed to cigarette smoking because it has been linked also with lung cancer and because it is an influence which might be eliminated if proved evil. With few exceptions [1,2] the findings have indicated that a significant relationship does exist between smoking (especially heavy smoking) and chronic bronchitis.[3–6] As smoking is probably only one of many contributory causes, it is important, in assessing the effects of differences in smoking habits, to ensure that as far as possible the individuals studied are similar in other respects. For this reason, Oswald and Medvei [5] examined the smoking habits and the incidence of chronic bronchitis in London Civil Servants—people living and working in much the same conditions—and their finding that chronic bronchitis was more frequent in smokers than in non-smokers seems particularly significant. Goodman et al.[7] noted that in this country the death-rate from chronic bronchitis in males is much greater than in females; but they suggested that this might be due to differences in working conditions and smoking habits rather than to a specific sex difference in susceptibility. This surmise is supported by Oswald and Medvei's finding that the incidence of chronic bronchitis in male and female Civil Servants with similar smoking habits was much the same.

Carefully controlled inquiries into the relationship between cigarette smoking and chronic bronchitis are valuable and necessary; for, although common sense suggests that not everyone will be able to draw smoke over the lining of his bronchial tubes with impunity for years, many people are uneasy nowadays until even the most reasonable hypothesis receives statistical support. Chronic bronchitics addicted to smoking are not so inhibited: in one group [8] the majority considered that smoking had caused or aggravated their bronchitis and a proportion of them had abandoned the habit on their own initiative. More should be encouraged to follow this example, but those who are not deterred from heavy smoking by the cost of tobacco are unlikely to be swayed by mere exhortation. A more promising course is to take every opportunity to impress on older school-children and young men and women the potential dangers of smoking; in this way we might counter to some extent the powerful propaganda in favour of tobacco which continues to face them on all sides. And it cannot be denied that the most persuasive contribution the doctor can make to an anti-smoking campaign is not to smoke himself.

WE have to record the death on Oct. 30 of Dr. J. C. CRUICKSHANK, professor of bacteriology as applied to hygiene at the London School of Hygiene and Tropical Medicine. He was 57 years of age.

1. Fry, J. *Brit. med. J.* 1954, i, 190.
2. Cotes, J. E., Higgins, I. T. T., Thomas, A. J. *Ibid*, 1956, i, 601.
3. Palmer, K. N. V. *Ibid*, 1954, i, 1473.
4. Leese, W. L. B. *Lancet*, Oct. 13, 1956, p. 762.
5. Oswald, N. C., Medvei, V. C. *Ibid*, 1955, ii, 843.
6. Lowell, F. C., Franklin, W., Michelson, A. L., Schiller, I. W. *Ann. intern. Med.* 1956, **45**, 268.
7. Goodman, N., Lane, R. E., Rampling, S. B. *Brit. med. J.* 1953, ii, 237.
8. Oswald, N. C., Harold, J. T., Martin, W. J. *Lancet*, 1953, ii, 639.

Special Articles

REMUNERATION OF DOCTORS

Supplement to the Outline of the Case already submitted to the Ministers*

1. AT their meeting with the Minister of Health on Aug. 1, 1956, and at the Minister's invitation, the representatives of the Negotiating Committee undertook with the aid of their legal advisers to provide a supplementary document, setting out in greater detail their views on the more legal aspects of the case, and the present document is now submitted in fulfilment of that undertaking.

Contractual Aspect of the Spens Recommendations

2. In para. 4 of the profession's case it was pointed out that the general practitioners, and the consultants and specialists, all entered the National Health Service on the basis of assurances by the Government that full effect would be given to the recommendations of the two Spens Committees; and the terms of these assurances were quoted. Since those recommendations were expressly accepted both by the Government and by the accredited representatives of both branches of the profession, it follows that those assurances, and the promises implied in them, constituted a contractual obligation of the Government to both branches of the profession as a whole, the substance of that obligation being that the rates of remuneration that would thereafter become payable to the individual serving members of the profession would at all times conform with the requirements involved in the recommendations of the Spens Committees.

3. This obligation is therefore a general overriding obligation to the profession as a whole, and one which exists independently of the particular obligations created by the personal contracts which serving members of both branches of the profession have entered into with executive councils, regional hospital boards, boards of governors, and hospital management committees, as the case may be. So far as the rate of remuneration is concerned all that these personal contracts do, and all that they are intended to do, is to give the individual practitioner or consultant concerned that particular rate of remuneration which will, at the time when such contracts are originally entered into, or are subsequently amended, accord with the requirements of the Spens recommendations. Thus, following the Danckwerts award, the rates of remuneration previously payable to general practitioners under their personal contracts for the years ending March 31, 1949, 1950, and 1951 were altered by reference (inter alia) to the respective higher "betterment" factors that had been found to be applicable to those years, and the personal contracts of those practitioners for those years, and of necessity also for years subsequent to 1951, were amended accordingly. Similarly, in the case of the consultants and specialists, there was a consequential alteration of their rates, the claim for which had also been based on the Spens recommendations, and their personal contracts were thereafter amended accordingly.

4. So far as the terms of these personal contracts relating to remuneration are concerned, therefore, they are merely the formal agreement with the individual members concerned of those particular rates of remuneration which, on the last occasion on which the basis of remuneration was reviewed in the light of the Spens recommendations, were found to accord with those recommendations. If, however, the Spens recommendations do in fact require some form of periodical adjustment of the scales of remuneration in certain events, and those events occur, effect would have to be given to that requirement, and the individual personal contracts would then have to be amended accordingly. This follows from the fact that continuing compliance with those requirements still remains as an overriding contractual obligation of the Government to both branches of the profession as a whole. In short, the requirements of the Spens recommendations, whatever they may be, remain at all times the paramount and governing consideration in relation to remuneration. The only question left is what are the requirements involved in those recommendations?

Requirements Involved in the Spens Recommendations

5. The vital question in issue here is whether the recommendations envisage and require periodical adjustments from time to time of the remuneration in the light of any subsequent changes in the value of money or increases in incomes in other professions that may occur, at any rate where these changes are of a substantial character. The profession submits that they do. On the other hand the view expressed by the Minister at the meeting on Aug. 1, 1956, was that the Spens recommendations only settled the terms of entry into the service, presumably meaning thereby that once the scales of remuneration (based on 1939 values) had been increased by whatever was the true "betterment factor" applicable at the date of the inception of the service (July, 1948) there was then a full and complete implementation of the Spens recommendations as regards the "betterment factor," and no future or further adjustment under that head was either envisaged or required by those recommendations.

6. It is submitted that it can be clearly demonstrated that this view of the Minister is unsound, and that the profession's view is the right one. This can be done in three ways. First, by reference to the actual wording of the reports and recommendations themselves; secondly, by reference to what has hitherto, and before the present differences arose, been clearly accepted by the Ministers themselves to be their true effect; and, thirdly, by reference to the construction placed upon those recommendations by Mr. Justice Danckwerts in making his award.

7. It is convenient to begin with the first Spens report relating to the general practitioners. This Spens Committee was appointed in February, 1945, and their terms of reference required them:

> (*a*) To recommend the range of total professional income of a registered medical practitioner in any publicly organised service of general practice; and (*b*) to frame their recommendations with due regard to the desirability of maintaining in the future (i) the proper social and economic status of general medical practice (i.e., when operating in a publicly organised service), and (ii) its power to attract a suitable type of recruit to the profession (i.e., when operating in a publicly organised service).

8. Since it was common knowledge when the committee was set up that the proposal was to bring such a publicly organised service into being as a permanent feature of our national life, but at some then unspecified future date, the wording of the terms of reference makes it abundantly clear that the ranges of professional income the committee were asked to recommend should be such as would be likely to maintain the proper social and economic status of general medical practice, and its power of recruitment, not merely at the time when the service was brought into being, but indefinitely in the future. Clearly therefore it was the committee's task to produce a long-term policy, and the tenor of the whole of the wording of their report shows that they understood that this was so, and framed their recommendations accordingly.

9. The committee recognised, however, at the time when they reported, that there had been a change in the value of money as compared with 1939 and, further, that increases had "in fact taken place in incomes in other professions" (para. 6 of the report). They confessed their inability to express an opinion as to what adjustments of pre-war incomes were necessary to produce corresponding incomes at the date of their report, and therefore said that:

> "Throughout this report our recommendations are, therefore, those which it appears to us would have been necessary for the purposes of our remit had we been reporting in 1939."

* The Outline of the Case in favour of a general increase in remuneration for general practitioners and for hospital medical staffs was published in *The Lancet* of July 28, 1956, p. 189. The present Supplement is, like the Outline, signed by Sir Russell Brain and Dr. Talbot Rogers, joint chairmen of the Negotiating Committee.

10. This method of approach provides a valuable clue to the intention of the committee in relation to the specific scales which they subsequently set out in their formal recommendations. In effect what they say is that our task is to recommend scales which, after the National Health Service comes into operation and the general practitioners' section of the profession becomes engaged in it, will maintain both the proper social and economic status of that section, and also its recruiting power in the future. We were also directed to have due regard to normal financial expectations of general medical practice in the past, and, with the aid of statistics supplied by Prof. Bradford Hill for the years 1936, 1937, and 1938 (see para. 6 of the report) we find ourselves able to recommend what the scales of remuneration should have been if this had been 1939 instead of 1946. We will therefore begin with those 1936–38 scales and first consider those figures (but still as if we were reporting in 1939 and not 1946) in the light of the two objectives of maintaining the proper social and economic status of the profession, and its recruiting power in competition with other professions, as well as in light of length of training period, danger to health, and other matters such as the degree of individual responsibility involved. On that footing their conclusion was (see para. 8 of the report) that these 1936–38 scales showed in two respects that they were too low even in 1939, and they said :

"We consider that conditions are substantially improved in both these respects, *and on the basis of a pre-war value of money*, the social and economic status and the recruitment of general medical practice would not, in the long run, be maintained."

The committee then indicated what adjustments and new scales would have been requisite in 1939 in order to obtain that substantial improvement which they considered necessary for the maintenance of both economic status and recruiting power ; but they still did so purely on the basis of a 1939 standard in respect of both these matters, and quite independently of the further adjustments they indicated would also be necessary to translate those new scales into such others as the subsequent change in the value of money and the subsequent increases in income of other professions would make requisite.

11. It is clear therefore that what the committee were in effect saying was this. Our task is to determine "what ought to be the range of total professional income of a registered medical practitioner in any publicly organised service of general medical practice" ; that is to say, not merely at some specific time, but generally for the future. The ranges we are to determine must also be such that they will enable both the proper social and economic status of general medical practice and its power of recruitment to be maintained, not only presently but in the future as well. We in fact do this by determining what would have been the proper scales of *net* remuneration necessary in 1939 to satisfy these last mentioned requirements, including the future element in them, and we must then leave to others the problem of the necessary adjustment of these scales to present conditions. Therefore, what we determine is that the proper scales of net remuneration in a publicly organised service of general medical practice should at all times be calculated by reference to the 1939 standards we have laid down, and therefore should at all times be whatever are the then equivalents of those 1939 scales, that equivalence to be determined by two factors, namely, the subsequent change in the value of money and the subsequent increases in incomes of other professions ; and it is only in this way that the two objectives of maintaining throughout the future both the proper economic status and recruiting power of general medical practice as against other professions, will be achieved (see the last sentence of para. 6 of the report).

12. It is submitted that this conclusion is amply confirmed by the fact that in their terms of reference there was a specific direction to the committee to have due regard "to the desirability of maintaining *in the future* the proper social and economic status of general medical practice and its power to attract a suitable type of recruit to the profession." These words can only mean that it was the duty of the committee, in framing their recommendations, to ensure the achievement of these two objectives not merely at the inception of the service, but indefinitely in the future. The words "in the future" are not subject to any limitation, and it would be contrary to common sense and to all sound appreciation of the meaning of language to subject them to some arbitrary limitation which is not contained in the terms of reference themselves.

13. It is further supported by the wording of their first and principal recommendation, which reads :

"(1) A scheme should be devised which will ensure that between 40 and 50 years of age approximately 50 per cent. of general practitioners receive net incomes of £1,300 or over, and which will also secure, so far as practicable, that between 40 and 50 years of age approximately three quarters receive net incomes over £1,000, that approximately one quarter receive net incomes of over £1,600, that slightly less than 10 per cent. receive net incomes over £2,000 and that, in a small proportion of cases it is possible to obtain net incomes of at least £2,500 . . . Here also, as in the body of the Report, we are expressing our recommendations in terms of the 1939 value of money."

Since this recommendation was expressed on that basis, and also on the basis of 1939 circumstances in general, it is obvious that the two objectives of status and recruiting power which the committee designed that it should achieve throughout the future would not in fact be achieved, unless the proposed scheme in fact contemplated periodical adjustments for changes in the value of money and incomes of other professions as and when substantial changes of that kind occurred. Throughout the body of the report the committee constantly make reference to these two objectives and it is unthinkable that having deliberately expressed their recommendations in 1939 terms, and as being subject to adjustment to present conditions, the committee did not intend that these 1939 scales should always be paramount, and so therefore would require to be translated from time to time into such different sums as any subsequent changes of the nature in question might from time to time require.

14. It is also helpful to refer to two other passages in the report (although there are many others) which demonstrate that, in relation to the two expressed objectives, the committee must have had in mind the necessity for continuing periodical adjustment of their figures in the light of subsequent changes in money values and increases in other professional incomes :

(1) In para. 13 of their report, the committee say : "If the recruitment and status of the profession are to be maintained men must be able to feel that more than ordinary ability and effort receive an adequate reward." How can that be secured if a reward once fixed in terms of money is permitted to depreciate in real value because the value of money itself has declined, or if no account is taken of increases in incomes of competing professions ?

(2) In para. 14 of their report, the committee say that they do not think it necessary that the percentage of incomes over £2000 should be increased, but that they think it is certainly necessary that this percentage should be maintained. The £2000 is of course expressed in terms of the 1939 value of money. How can the desired percentage of such incomes be maintained in the absence of adjustments to deal with the changes in the value of money as they from time to time occur ?

15. Finally, on this particular aspect of the case, it should be pointed out that the committee were well aware of the possibility of one type of periodical adjustment that might from time to time become necessary. That is in connection with the ratio of practice expenses, to which reference is made in para. 21 of their report. There the committee point out that their recommendations (on a 1939 standard) are in terms of net, not gross, incomes. In fact right up to the present day the necessity for periodical adjustment in respect of practice expenses has never been anything but clearly recognised by the Ministers, and the amount of these practice expenses is of course bound to vary with subsequent changes in the value of money as and when such changes occur. The gross amounts payable to practitioners in fact incorporate two factors, namely, a reasonable sum to cover expenses, and the amount they are to receive *net* for themselves.

It would indeed be an odd result if one factor is clearly to take account of all subsequent changes in the value of money, and the other is not.

The Interpretation Hitherto Adopted by the Parties Themselves

16. In the first place reference can be made to the written "pleadings" of both sides in the Danckwerts adjudication in 1952, when the adjudicator was asked to "determine the size of the Central Pool," not merely at the inception of the service but for all years up to date, the last completed year then being the year ended March 31, 1951.

17. In paras 37 and 38 of their written case before the adjudicator, the General Medical Services Committee asked the adjudicator to fix the size of the Central Pool for the nine months ending March 31, 1949, for the year ending March 31, 1950, and for the year ending March 31, 1951. In para. 24(b) they specifically claimed that the amount of the Central Pool as previously fixed for each quarter of a year was wrong, because it took no account of the extent to which the "betterment factor" varied from quarter to quarter. In para 25(1), where they state that the amount of the "betterment factor" is one of the points in dispute, they clearly implied that this factor might be different for the different years concerned. It is also clear from paras 38 and 39 that the General Medical Services Committee were contending that the "betterment factor" should be adjusted year by year from the inception of the service onwards, in the light of changes in the value of money, just as the amount paid into the Central Pool in respect of practice expenses requires to be adjusted year by year in the light of evidence as to the proportion of general practitioners' gross receipts which is absorbed by practice expenses. We have been unable to find anywhere in the written case of the Ministers, or in the reported speech of the Attorney-General, any point at which this principle of periodical and continuing adjustment was controverted. The argument of the Government on this part of the case appears to have been confined to disputing the quantum of the adjustments which ought to be made, the suggestion of the Government apparently being that if the remuneration of the professions generally fails to keep up with the fall in the value of money, the remuneration of the medical profession should not do so either (see the Shorthand Notes: the Attorney-General at Day 3, pp. 24 and 40, and Mr. Grant's observations on the fallacies of such an argument at Day 1, p. 10, and Day 3, p. 44).

18. In fact, in para. 8 of the Ministers' Supplemental Case (which was a reply to the committee's main case), it was merely objected by the Ministers that it was not practicable to make an adjustment for "betterment factor" at such frequent intervals as quarterly. The objection in this form is quite inconsistent with the view that whatever adjustment of the "betterment factor" was to be made, it was a once-and-for-all adjustment, because it amounts to a tacit admission that periodical adjustments are in fact required.

19. Bearing in mind also that the adjudicator was asked to determine the size of the Central Pool for all years up to date, it is not without significance that, in para. 49 of their written case, the Ministers gave particulars of the periodical changes in the value of money during the period from July, 1948, up to December, 1951, and also in the Price Index figures from June, 1947, to December, 1951. In para. 56 (in relation to increases in incomes of other professions) they also gave the different increases for different dates. Surely these varying figures would have been put forward on the footing that a different "betterment factor" might be shown to apply to each of the separate years concerned in the adjudication?

20. An equally important admission is to be found in the evidence given by Mr. Danielli (Deputy Accountant General to the Ministry of Health) at Day 2, p. 49, during his re-examination by the Attorney-General. He was dealing generally with the question of the method of calculating the amount of the Central Pool, and how it was to be done after the adjudication was over. He was asked to explain it in more detail, and the answer he gave was:

"What I had in mind was this. After this adjudication was over and the adjudicator had given us a figure which he regards as an appropriate one for the Central Pool, then that figure would be taken as the basis of our pool payments and adjusted to take account of changes in the population year by year, adjusted at certain intervals which we should have to agree with the profession because you cannot do this sort of thing every five minutes to take account of a major change in practice expenses *and again at intervals to take account of any future major change in, shall we say, the value of money*. That is what I think we had in mind."

21. That this was no slip on Mr. Danielli's part, but a completely accurate statement, is confirmed by the N.H.S. (General Medical and Pharmaceutical Services) Regulations, 1954 (S.I. no. 669 of 1954), and the March 31, 1955, edition of the Ministry of Health *Handbook for General Medical Practitioners*. In the case of general practitioners, the major part of their remuneration consists of a capitation payment. This may be enhanced by an additional capitation payment called a "loadings payment," and para. 1 of part II of the First Schedule to those regulations provides that the amount of both those capitation payments is to be determined by the Minister after consultation with the general practitioners' organisations. Para. 178 of the Handbook then states that these capitation payments are made out of the Central Pool, and it also states that the method of calculation of the Central Pool was revised as a result of the Danckwerts adjudication in 1952. Para. 179 of the Handbook then goes on to say that the Central Pool is now calculated on the basis of the net remuneration appropriate for general practitioners in 1939 (as recommended by their Spens Committee in 1946) *together with a betterment factor taking account of changes in the value of money since that time*. It also states that this amount is then adjusted to take account of changes in the number of general practitioners, their estimated practice expenses, their estimated remuneration from other sources, and the superannuation contributions made by the Exchequer. Para. 180 of the Handbook then goes on to say that after the payments derived from the Central Pool have been made, any balance of money in the Pool at the end of each financial year is "distributed to doctors in proportion to their respective earnings by way of capitation fees and loadings"; in other words, by way of an additional capitation payment.

22. The significance of this is clear. The major ingredient in the total remuneration payable to each practitioner is obviously the capitation payment, whether general, "loading," or residual. But since the actual amounts of these capitation payments are not specifically fixed by the regulations, and are payable out of the Central Pool, it must follow that their amount for any year will in the end always depend upon, and be conditioned by, the total amount of the Central Pool itself for that year. And since, as stated in para. 179 of the Handbook, the amount of the Central Pool itself for every financial year is now to be calculated for that year in accordance with the Spens recommendations of 1946 (including a betterment factor taking account of changes in the value of money since that time) it must equally follow that if and whenever such changes occur, the amount of the Central Pool and consequently the capitation payments will change to a corresponding extent. This is therefore what is now publicly represented by the Minister in his Handbook to be the present position, and it is in complete accord with the profession's view, and contrary to the view expressed by the Minister at the meeting on Aug. 1, 1956.

The Interpretation Adopted by the Adjudicator

23. In his opening speech in the adjudication proceedings (Day 1, p. 4) Mr. Grant suggested that the Adjudicator might deal with the need for periodical adjustment by laying down a formula. To this the Government objected, but it is quite clear that the objection was not based on the contention that periodical adjustment is wrong in principle. (See Mr. Danielli at Day 2, p. 49, and the Attorney-General at Day 3, p. 41.) Mr. Grant returned to the point at Day 3, pp. 42 and 43. At the top of p. 43 the Adjudicator says that he might have to indicate the appropriate betterment factor for

a year earlier than the year ended March 31, 1951. Mr. Grant, agreeing, says that it would be a different figure, and the Adjudicator says: "That is what I had in mind." Thus the Adjudicator was asked (and without any objection from the Government) to indicate not only the appropriate betterment factor for the year ending March 31, 1951, but also that for an earlier year, that is to say, on the basis that this factor might be a different one for different years. This in fact was precisely the basis on which the Adjudicator proceeded in making his award, his betterment factor for the year ended March 31, 1951, being 100% and his betterment factor for 1948 being 85%. The Adjudicator's award is thus a clear and binding decision, as between the Government and the medical profession, that on the true construction of the Spens report it requires periodical adjustment of general practitioners' net remuneration in the light of any then changes in the value of money and the incomes of other professions.

24. The Government accepted the results of the adjudication; and as already indicated the current edition of the *Handbook for General Practitioners* (revised to March 31, 1955) states the present position with regard to the betterment factor as one which takes account of changes in the value of money since 1939.

Consultants and Specialists

25. It can now be fairly briefly demonstrated that continuing periodical adjustment of remuneration, in the light of changes in the value of money and changes in incomes in other professions, is also required by the report of the Spens Committee on the Remuneration of Consultants and Specialists.

26. That committee was appointed in May, 1947. It also was directed by its terms of reference to have due regard (inter alia) "to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice." These words can only mean that it was the task of the committee (as it was the task of the corresponding committee on the remuneration of general practitioners) to produce a long-term policy, and again the report of the committee shows clearly that they addressed themselves to that task.

27. Here also the committee were instructed to have due regard to what had been the financial expectations of consultant and specialist practice in the past, and they also began with statistics prepared under the guidance of Prof. Bradford Hill as to the professional incomes of consultants and specialists in the pre-war period. Although they did not report until May, 1948, they also framed their recommendations in terms of the 1939 value of money, with an almost identical provision as to the adjustments that would be necessary in view of the change in money values and the increases in incomes of other professions. Thus, para. 2 of the report concludes with these words:

"We leave to others the problem of the necessary adjustments to present-day values of money, but we desire to emphasise as strongly as possible that such adjustments should have direct regard not only to estimates of the change in the value of money but to the increases which have in fact taken place since 1939 in incomes both in the medical and other professions. In our judgment it is only if corresponding changes are made in the incomes of consultants and specialists that the recruitment and status of the various branches of specialist practice will be maintained."

28. Here again the adjustments the committee must have had in mind would be those for the time being necessary to maintain the 1939 standards they were laying down, because their recommendations are that all the various grades of practitioners with whom they are concerned "should receive" (which must mean should receive at all times during the existence of the service) certain specified salaries, which were however expressed in terms of the 1939 value of money. It is impossible to give effect to recommendations framed in these terms without continuing periodical adjustment of the actual salaries for the time being paid, if those salaries do not at that time properly represent the same salaries expressed in 1939 value of money. Moreover, this requirement must have been an inherent part of the committee's recommendations, otherwise those recommendations would not have been consistent with the terms of reference of the committee, because (1) they would have ignored the problem of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit and (2) they would have been inconsistent with the recommendations (by that time accepted by the Government) of the committee on the remuneration of general practitioners. So far from ignoring the need to keep a proper balance between general practitioners and consultants, the committee had the point well in mind, as is apparent, for instance, from the second sentence of para. 11 of their report.

29. In fact the need for continuing periodical adjustments can be shown to be implied in the wording of the committee's report and two examples may be sufficient for this purpose:

(1) In para. 9 of their report, the committee say that in arriving at their recommendations for potential specialists they had in mind that intending specialists who do not possess private means should not be called upon to pass through a stage of comparative penury and hardship, or be tempted to spend too much time in supplementing their income from other sources. How can these objectives be secured if the scales which the committee have fixed are not subject to adjustment from time to time for changes in the value of money?

(2) In para. 12 of their report the committee justify a maximum figure of the order of £5000 for clinical work by saying that "if the best possible recruits are to be attracted to specialist practice, there must remain for a significant minority the opportunity to earn incomes comparable with the highest that can be earned in other professions." How can this opportunity be preserved if the cash remuneration of that minority of consultants and specialists is not adjusted by reference to changes in the value of money, and the effect of such changes on the remuneration of other professions? And how in the absence of such adjustments would it be possible to achieve the committee's declared object of maintaining the position of British medicine in a competitive market which the committee pointed out includes the Dominions and the United States of America?

Conclusion

30. Having regard to all the above considerations, therefore, it is submitted that the profession's view on the vital point in issue is right, and that neither in the reports themselves, nor in any of the attendant circumstances in general, can any support be found for the contrary view expressed by the Minister at the meeting on Aug. 1, 1956.

NEW SCOTTISH POLIOMYELITIS UNIT AND VIRUS LABORATORY

AT Ruchill Hospital, Glasgow, a new poliomyelitis unit and a new virus laboratory have been created by ingenious reconstruction of a large ward block. Though in the same building, they are completely separate.

The Poliomyelitis Unit

Patients are received in 5 isolation cubicles provided with piped oxygen, compressed air, and suction. When a cabinet respirator is used, the noisy pump can be left in the corridor and connected to the cabinet through a porthole in the cubicle. Convalescent patients are accommodated in one unit of 4 beds and four units of 2 beds. All the patients are under observation from a nurse's station (see figure).

Tracheotomy and other minor surgical procedures are carried out in a small theatre adjacent to the isolation cubicles. Facilities for the study of respiratory function have been provided, and will be used by the medical and surgical thoracic units of the hospital as well as by the poliomyelitis team.

At the convalescent end of the ward there is a small physiotherapy unit and a dining and recreation room for patients who are out of bed. The kitchen has a "clean" compartment and a "dirty" compartment, connected only by a hatch. Food is delivered to the "clean" compartment from an

external ramp and distributed from there to the patients. Used utensils and food remnants return to the "dirty" compartment and sterilised utensils are then passed through the hatch to the "clean" compartment.

The interior decoration of the unit with its light harmonious colours, freshness, and elegant simplicity is a happy example of contemporary style.

The Virus Laboratory

The laboratory is a section of the department of bacteriology of the University of Glasgow and serves the western part of Scotland. It occupies a basement floor and a floor at ground level.

In the basement there is a laboratory which houses noisy equipment and an inoculation box for handling dangerous infectious materials. Air can be exhausted from this box and sterilised by heat. The basement contains also a library and plant for ventilation and heating.

The main part of the unit is on the ground floor. There is a general routine laboratory for serological work and a special laboratory for tissue-culture techniques separated from the routine laboratory by an anteroom. The air in the special laboratory cannot be kept sterile, but it is hoped that, by controlling the flow of conditioned air, outside dust will be excluded, there will be no airborne carriage of infection to the rest of the laboratory, and accumulation of infection anywhere in the suite will be avoided. There is a hot-room for the incubation of tissue-cultures, a laboratory for egg-inoculation techniques, a room for sterilising and preparing equipment, a small biochemical laboratory, and accommodation for teaching and secretarial work.

A new building, at a distance from the laboratory, has been constructed for work with animals.

It has two wings separated from each other: a "clean" wing for breeding stock animals free from outside contamination, and an "infected" wing for the conduct of experiments. Air exhausted from the "infected" wing is discharged well above roof level to ensure dilution in the atmosphere.

Opening Address

These new units were opened on Oct. 26 by Sir HAROLD HIMSWORTH, F.R.S., secretary of the Medical Research Council. Sir Harold said that while today final victory over bacterial infections was within sight, there had so far been only isolated if brilliant successes in the battle against virus infections. It was a curious irony that the first great victory over infectious diseases had been in the virus field—the conquest of smallpox by vaccination. Sir Harold thought that virus diseases were more likely to be overcome by preventive than by curative methods, and poliomyelitis seemed to be a case in point. The promise of poliomyelitis vaccine was so great that he hoped that before very long no use would be found for the new ward unit. Preventive work in virus disease was possible, however, only if the causal viruses could be isolated and studied. The new virus laboratory provided facilities for such research and he thought the idea of linking it closely with field work was good. He congratulated all concerned with the planning and construction of the new units and paid a special tribute to the contribution made by Dr. Thomas Anderson, reader in infectious diseases in the University of Glasgow.

Prof. J. W. HOWIE, in a vote of thanks, said that in proportion to the number of medical graduates trained in Scotland the amount of research done was far too small. Progress in medicine meant closing wards and opening laboratories.

[Scottish Studios

Convalescent unit: nurse's station under clock.

The Widdicombe File

XXXVI. CLINICOSIS (3)

DEAR UNCLE TOM,

Many thanks for your admirably executed circumnavigation of the main points at issue. I hope its cleverness (which seems to be familial!) won't delude you or anyone else into thinking that you have really answered my letter. But I enjoyed reading it, especially the part about the maternity services with which I heartily agree: in fact I said that they were a good thing—which makes me a bit worried about your failure to appreciate the written word as well as the inherent message. But enough of personal insults. Enough too of red-herrings like Memberships. But by no means enough of controversy. Up with protagonists like Sir Francis Walshe who aren't afraid to say what they think! Up with Mr. Farquharson who rightly or wrongly beat hell out of the gastrectomists last week! Blokes who have never challenged anything might as well be dead.

But to brass-tacks. And firstly I see I must summarise in simple language what I did and didn't say, much as it grieves me so to do:

(*a*) As at present run, the medical side of the Infant and Child Welfare Services does less constructive work than is often thought.

(*b*) The useful work that is done (and I don't deny that there is useful work done) would be better and more ethically handled by competent family doctors in special afternoon clinics run with the help of the Local Authority.

(*c*) Babies are too fat.

I did *not* criticise the maternity service. I did *not* criticise the D.C.H. (I said that family doctors should be helped to take it). I did *not* want to disband immunisation, dismantle the health service, &c. (although my words on immunisation were admittedly open to misinterpretation): under the Cobbleigh (R.) Plan, the family doctor will immunise at his special clinic, as indeed very many of them do already (unpaid). And, please, I didn't criticise clinic doctors. As doctors they are like G.P.s, M.P.s, and F.R.C.P.s; some are good, and some doubtless are better: round here half are local family doctors and the other half registrars' part-time wives, and they are all good. But I still think that, however good, the clinic view of a case is *inevitably* less complete than the family doctor's, and in most clinic cases that is quite important. The clinic doctor doesn't know that baby won't feed because Mum has the hell of a time with a drunken husband, or a difficult In-Law situation, or one of the hundred other things that can lead the happy infant's path astray. The family doctor doesn't *need* to go into

the highways and byways after cases: he knows them like the back of his hand, especially the problem ones.

Now you blokes are clearly enthusiasts, and the snag about enthusiasts is that they are often a little—how shall I put it—bigoted? Out of touch with reality almost. They find it extremely hard to take an objective view. Looking at this from a slightly wider background than you think (vide infra) I see two distinct possibilities:

1. As at present, a clinic run by the Local Authority, employing a medical officer who sees, for minor health matters and routine checks, cases belonging to neighbouring family doctors.

2. A family doctor running his own clinic once or twice weekly with the help of the Local Authority (both financial and with equipment and assistance), seeing his own cases and perhaps those of his partners.

Which is the most ethical? The question of ethics becomes quite agonising when the clinic doctor is a local family doctor seeing his colleagues' cases: contradicting their advice, perhaps, or perhaps not; but *bound by contract to see and advise the patient of another doctor—without that doctor's knowledge and consent.* It's enough to make the Gold Head fall off our famous Cane. You say that the family doctor has neither interest nor time, and hint that he hasn't the skill either. True in places perhaps, but decreasingly so: the quality of the candidate to our competitive family doctoring is pretty high now, and lists are falling. Granted bad times needed good clinics. Bravo to the clinics for the work they did in the bad times, I am fully aware of it and don't wish to belittle it one jot; but times change, and we are now I think at the point of departure. Is the family doctor to become more important or less; is his work to be turned over to more and more outbreaks of clinicosis, or will he be allowed to take his place *fully* as the one responsible for his patients, and their friend and adviser on health matters? The inevitable bureaucratisation we have suffered with the N.H.S. makes this an especially pungent point. Having seen both family practice and clinic practice, my vote goes fully, emphatically, and finally to the former.

Yes, I *have* tried being a family doctor. (You've been confusing me with my brother Jack who qualified last year; but then we're a large family.) Locums again of course, about a dozen altogether in something over six months: I suppose I've done about the same in clinics. If I were a better man I'd be in family doctoring now; it's *real* medicine. That was just six years ago. After that I did a couple of the usual junior jobs, and then for near three years was in foreign parts as a sort of pioneer where I too (believe it or not) have seen smallpox and have, like you, done tracheotomies on "grey little bodies," *and* done it in a mud hut with a shade temperature around 116°F. I have trudged through the night in monsoon storms, half-naked, assembling drip apparatus out of rusty enema-cans, bits of string, and water out of the ditch; I have seen the pulseless motionless victims of the cholera vibrio rise like Lazarus from death after many pints of Rogers' wonderful fluid. *That* Uncle, was enchantment, it's the only time I have been quite quite certain that were it not for *me*, for my puny efforts, fellow-human beings would die; the only time in my life when there wasn't someone else there who could have done the job as well or better. During the day I sat at a corner of the Bazaar pumping antigen into passers-by at a hundred an hour; one syringe we had, and about two needles. The epidemic was controlled, but not before hundreds had died. *That's* where you and your sort of public health are needed, not chasing decimal points down the vital statistics of our over-fed country. You live in the past, Uncle, and assume great superiority because I wasn't there; but have you, at the worst times you have ever known here, been M.O.H. of a village where 3 infants out of 4 suffer chronic malaria and famine œdema? Where the noise of the flies buzzing in the dung-pits drowns conversation at meal-time? Where maggots crawl round wounds and out of noses: 300 maggots, yes honestly, is what we took out of the inside of a woman's face, yet she recovered. Rickets and scurvy sure, and typhoid and typhus and yaws and leprosy. Everything except the plague. Cæsarean section was by storm-lantern and ether with a Hb around 30% usually; most cases lived. Not only had we no taps with long handles; we had no taps, nor electricity, nor gas cylinders, X-ray was 80 miles away. That was *real* medicine too, stark and rugged, and rather wonderful, and it certainly showed me what Public Health can mean to a community.

Even though I am now separated from the Desert by a year's lecturing and near two years' Registraring, perhaps I look on your clinics too much with Eastern eyes; perhaps I am too intolerant of twelfth men at operations and blokes doing other blokes' work. But please don't go on fighting battles long since won; rather meet the challenge of the battles hardly joined. The need for your vitamins and injections in Asia or Africa is beyond the grasp of the human mind: or one can stay here and tackle obesity, cigarette-smoking, children outside pubs, and above all, mental health.

Briefly to Babies. I haven't seen much coronary thrombosis in infancy either, but advanced atheroma was often found in healthy young adults killed in the late emergency, and kids with familial hypercholesterolæmia get angina (Cecil, *Textbook of Medicine*, 1955; p. 704). Great-grandad died of old age in his 90s, Grandad with something abdominal in his 70s. Dad had his first coronary in his 60s. Your generation is going out rather suddenly in it's 40s and 50s; it makes Consultant vacancies but it's scant comfort for us to know that we may get ours in our 30s. Rather an urgent problem isn't it? Dr. Sinclair, bless him, in THE LANCET, blows off a powerful salvo at your Welfare Food (p. 893—the last issue) did you read it? Pending the result of the fundamental research that is so badly needed, may I hazard the guess that Full-Cream National Dried Milk (fully fortified with luscious body-building Vitamin D) is the most dangerous poison in common use—and not in the Pharmacopœia, let alone Schedule 4? Although I have no very valid statistics to hand, my firm clinical impression is that National Dried kids are fatter, coarser, and unhealthier than breast-fed kids. A survey of my own shows that the bottle-fed one is much fatter, than the breast-fed ones were, and I *know* we get the mixing right: we skim off the horrible thick yellow layer at the top now and have reduced the dose, with good clinical results. After all, a child in the first nine months of life drinks about 50 gallons of milk. God meant that to be breast-milk, not modified dehydrated reconstituted vitaminised cow's milk. As the LANCET editorial said about the bread, if you muck about with something natural, it's for *you* to convince *me* that it does no harm, not the other way round.

Lastly, Uncle, if you feel able to write again (and I hope you will) please don't assume automatically that I am as green as brother Jack, and therefore inevitably wrong. I have been lucky enough to get around a bit; hitch-hiking from S.E. Asia through 14 countries tends to put clinics in perspective—*world* perspective. Meanwhile I look forward to the time when you and I shall meet: on the Cobbleigh Committee perhaps, set up to modernise the Medical Side of the Welfare Services.

Your still affectionate but completely
unrepentant Nephew,
DICK.

Medicine and the Law

A Choice of Risks

A MAN, aged 74, was admitted to hospital with bronchopneumonia.[1] Previously he had been bright, alert, and active, and had helped with the hard work in a butcher's shop. While he was in a private ward of the hospital, an accident resulted in severe burns to his left upper arm and chest. Later, his physical and mental health deteriorated, and he suffered from delusions. He sued the regional hospital board for damages.

The doctor who arranged for his admission said that the patient was delirious, but the night sister said that he was not delirious when admitted earlier in the day. She did not consider that this was a bad case of bronchopneumonia: the patient's conversation was quite lucid, and he told her that he suffered from a complaint which caused frequency of micturition. She gave the patient a sedative at 11.30 P.M., and left him quietly in bed. When she went back at 1 A.M. he was fast asleep, and his pulse and respiration were good. She left him and returned at 2.5 A.M. when he was still asleep. At about 2.30 A.M. the ward orderly came running to tell her that something had happened to the patient. The night sister said that she found the patient lying on the floor on his back, semiconscious and moaning; his left arm was close to the electric fire which was lying face downwards and causing the floor to smoulder. The floor about him was wet. Cross-examined, the night sister said that there might have been periods when the patient might not have been able to take care of himself; but having given him the drug, she took a chance on leaving him alone.

Evidence was also given by the doctor on duty when the patient was admitted. So far as he could remember, the patient's own doctor did not say anything about the patient being delirious. If that had been mentioned, he did not think that he would have arranged for the patient to be placed in a private ward. He approved of the sedative administered by the night sister, which he would have hoped would have kept the patient quiet for some hours. Under those circumstances, he did not think that he would have made any recommendation about the electric fire.

Summing up, the judge said that the hospital authorities had a choice of risks—whether to leave the fire on for the patient's comfort and safety during a very cold night, or to switch it off, in which case the temperature of the room would have fallen and caused danger to the patient. Under all the circumstances, he thought it was a reasonable risk for the hospital to have taken in leaving the fire on, because the plaintiff had been given a drug and was asleep and unlikely to get up. The judge was not satisfied that this amounted to negligence and gave judgment for the regional board.

Gas Gangrene after Injection

At an inquest in Blackpool on Oct. 8 the death of a 22-year-old man was attributed to a "many millions to one" chance.[2] The patient was admitted to hospital because of a severe attack of asthma and he died later of gas gangrene. The view was expressed at the inquest that the organism had been present on the patient's skin and that the injection he was given in hospital introduced it into the body. A pathologist pronounced himself satisfied that the system of sterilising syringes at the hospital was in accordance with modern standards. The coroner said that there was "not the slightest criticism of hospital treatment." "There is no need whatever," he added, "for any kind of public uneasiness on account of this case." A verdict of death by misadventure was recorded.

1. *Cambridge Daily News*, Oct. 11, 1956.
2. *Yorkshire Post*, Oct. 9, 1956.

Parliament

Royal Commission on Marriage and Divorce

IN a debate in the House of Lords on Oct. 24, Lord MANCROFT, the joint parliamentary under-secretary of State for the Home Department, said that many of the Commission's recommendations could, and would, be dealt with by minor legislation, by amendments to the Rules of Court and the like; some would be dealt with administratively; but some undoubtedly required major legislation and the Government could hold out no present hope of being able to introduce such legislation. This proviso applied in some ways also to the all-important question of the welfare of children. Probably one of the most important recommendations was to the effect that no decree absolute should be granted until the court was satisfied about the children's welfare. Something could be done by amending the Rules of Court, but legislation was required to enable the court to go so far as to withhold a decree.

Viscount KILMUIR, the Lord Chancellor, winding up the debate, explained that he proposed very shortly to invite the Supreme Court rule committee to consider an amendment of the Rules of Court whereby any party to divorce proceedings who sought to obtain an order for custody of any children would be required to supply the court with full particulars of the arrangements which he or she proposed for the children's future maintenance and upbringing. He hoped that this would go some way toward filling the gap which undoubtedly existed at present. At the same time he was arranging for an extension of the exceedingly useful work done by the probation officers who had for the past six years been seconded to the Divorce Division in London and who had been of considerable assistance in providing the court with accurate information about the home background where there had been a contest between the father and the mother for custody of the children, or about the terms on which access to them should be granted to either parent. Advice of this kind would in future be available to the judges trying divorce cases outside London, and he hoped that full use of it would be made.

Government Economies

On Oct. 25 in the House of Commons, Mr. HAROLD MACMILLAN, the Chancellor of the Exchequer, announced that as part of the Government's scheme to save £100 million in this current year, it was proposed to alter, as from Dec. 1, the method of charging for National Health Service prescriptions, the cost of which was today running at nearly 5*s.* an item. From that date the charge would be 1*s.* per item instead of 1*s.* per form. Existing arrangements for refunds would be continued. The saving would be £$^{3}/_{4}$ million this year and £5 million in a full year.

This statement is discussed in an editorial on p. 929.

It was also proposed to make a seasonal increase, from 7½*d.* to 8*d.* a pint, in the retail price of milk as from Jan. 1, 1957, for the remainder of the winter. The net saving this year would be £4$^{1}/_{2}$ million. The charge for welfare milk would not be affected by this change.

QUESTION TIME

Salk Vaccine

The Minister of Health said that trials with Salk vaccine in other countries gave good reason for believing that the British Salk vaccine would confer some protection, but a statistical assessment of its value was being undertaken by the Medical Research Council and any results would not be known for some months.

Mental Defectives

In England and Wales 6909 mental defectives are awaiting admission to hospital of whom 3315 are under sixteen. The regions with the longest waiting-lists are Sheffield (1010) and Wales (972).

In England Now

A Running Commentary by Peripatetic Correspondents

WE always try to take an adequate social history, but one of our patients clearly felt we had not got all the details we needed. After his first attendance he wrote:

SIR,—This is My Life, I arrive out of Bed at 6-30 in the Morning Make the Tea and get My Wife off to Work She leaves the House at 7-30 and is not Home till 8 oclock at Night She is away from over 12 Hours a Day, I, only sees Her less than 3 Hours a Day that is Morning and Night and there is Our Son John. He has His Breakfast and then leaves for School at 8-45 in the Morning and arrives Home between 4-30 and 5 oclock, that leaves Me to wash the Breakfast things up, make the Beds, Wash the Floor, and then go out and do the Shopping and then get back to do the Cooking, I, peel the Potatoes Carrots and Onions and Cook a good Dinner for the Eveing, I have My Lunch at 12-30 and clear the Table, and put the Cups and Saucers Sugar Milk Knives and Spoons on the Table for Tea, and then I leave for Work at 1-45 in the Afternoon and arrive Home between 10-30 and 11 oclock at Night, It is allways gone Midnight before I get to Bed by the time I wash and have My Supper, I have a very Tyering Life, I have to see to All, I pay the Rent when the Agent calls on Monday, 10 oclock in the Morning which is £1-0-0 for 2 Rooms which is in a terriable Condition. On Saturdays I have the Bread and Milk Bill to Pay then the Coals the Washing from the Laundry, and the Week End joint and the rest of the Shopping, All Shops are Shut by the time My Wife arrives Home, So You See I have My Work cut out. I have to Make My Money while the Weather is fine to provide for the Winter as I do not earn much in the Bad Weather.

Sir I would like You to Call on Me so that you can See the Basement Flat Your Treatment May be Labour in Vain as it in a bad state, You can bring some Treatment with You I would be pleased to See you. Sir I have been going places out of London, I am very Fit and Well in Myself, I think the run out in the Country has helped Me a lot.

I have a good Fire, I make it up when I leave and My Son John makes it up when He arrives Home from School, My Wife is Home long before Me. So You can see how I am placed We are a different Family We Keep to Ourselves

Yours
Truly
X.Y.

I could not remember what X.Y.'s job was till I looked up his notes. I wonder if any of my fellow peripatetics can guess. To guide them I will only add that his best single day's earnings was £15. On a good average summer day he gets £5.*

* * *

November is the month for bonfires, but the ones that are lit to destroy the garden rubbish are mean affairs compared with the ones built, down our way, to celebrate Nov. 5.

Warwickshire has a right to celebrate the failure of Guy Fawkes (said to be the only man who went to Parliament knowing exactly what he wanted to do). The plot was hatched in the neighbourhood, some say at Maxstoke, and the table around which the would-be regicides sat can still be seen in the castle. Others say at Ashby-St. Ledgers first in a room which has been preserved in its lovely Tudor architecture, but joined on both sides by a much newer building of Northampton stone. Between Maxstoke and Ashby lies Dunchurch where the plotters forgathered on the pretext of hunting next day and waited to hear the result, and, when they did, scattered.

The natives now build bonfires every year. The best foundation appears to be a tripod of long seasoned branches, and I have even seen three young saplings supporting all the smaller twigs and branches on the outside, while inside is more combustible matter such as large boxes and a little straw. In one hamlet of perhaps twenty souls I saw a farm labourer carrying a full-sized effigy to the top of a pile of straw, a cube of four bales on a base of another four. Fireworks complete the pyrotechnics, and, after they have gone off, the young continue their enjoyment with dancing until the small hours. It is curious that we celebrate the failure, 350 years ago, of a paid would-be assassin so much more vigorously than the exploits of the sailor who almost exactly two hundred years later saved the country from invasion.

* Solution at end of News, p. 950

* * *

I was disappointed by the anti-Italian bias which my fellow peripatetics betrayed last week. Not content with converting that popular song *Che sarà, sarà* into French, they went on to attribute to the Romans in Britain "homely little ways of killing off the male population and elders and removing the more comely females and children for their own use." This, Sir, is a gross libel. The first thing the Romans did on occupying a country was to build public baths; the second was to turn a bunch of sharp business men loose; the third was to construct roads—presumably with the laudable intention of starting the whole trade-cycle over again further afield. The Webbs had nothing on the Romans over municipal government.

* * *

My friends have lately given me an imposing record-player of the latest type. While I wired it up Junior collected a stack of 10-in. discs which we piled on to the spindle as directed. The whole family gathered round, not to hear the music, but to watch the cool deliberation of the machine as it slid expertly through the pack, gauging the radius of each disc and depositing the stylus adroitly in the starting-groove. Then we turned the pack over and ignored the lesser miracle of the telly until the process was repeated. Frankly, we were all a little overawed by the new toy. Next day I rigged it up again, loading it with four 12-in. discs. Once again, it negotiated sides 1 and 3 of the *Polovtsian Maidens* and *Vesti la giubba* with contemptuous ease, but on *Che gelida manina* it fumbled uncertainly for a moment and then dropped the sapphire into a groove corresponding to the 10-in. mark: *Sono un poeta* it proclaimed appropriately but prematurely. Somehow after that lapse the new god seemed more one of the family, as likely as the next man to post its wallet and cheque-book in the corner pillar-box.

I think we shall all feel better adjusted to automation when it turns out an occasional teratoma—say a propeller-shaft with three universals or supernumerary pedals in the rear compartment. In future when we want Gigli to start at the beginning we shall flip the switch from AUTO to MANUAL, and assist Victor Ludorum with our own tiny hands.

* * *

A visit to market once a week is an indispensable activity in these country parts. I always make a point of going, not only to refurbish the larder but to meet patients on the same errand. Recovery is incomplete, I reckon, until the patient appears at market. To greet her there sets the seal upon her lung healed of pneumonia more satisfactorily than can any X ray. I have had many consultations by the market stalls. Too timid to come to surgery, or too lazy, they will speak freely in that familiar venue. And it is the free uninhibited conversation that heals body and mind. Drugs, appliances, injections are new-fangled. The ancient art is not in them. But to know how to release pent-up anxieties, to set free explosive inhibitions by words and sympathy, there is the art of medicine. Hubert possesses this art to a surprising degree. No-one comes to surgery without going away a happier person. "And life," said the poet, "is colour, warmth, and love."

We were both in the surgery the other evening when Phyllis came. After having had her consultation and warming to Hubert, she had the audacity, as I thought, to ask him for a bottle of liniment for her young man to use after football. Now this was asking for it, surely. We weren't here to dispense luxuries. But I didn't know my principal. Without a word he made up the liniment. When I glanced at the label as he handed it to Phyllis it read, "To John with rub from Phyllis."

* * *

Announcement at end of our exhibition of arts and crafts by doctors.—All exhibits not collected by exhibitors on Monday will be taken to the department of pathology at X Hospital.

Letters to the Editor

ADVERTISEMENTS FOR DRUGS

SIR,—Having been thinking on similar lines for some time, I want to support the lead given by Professor Rosenheim and his colleagues (Oct. 20) in condemning the methods of many pharmaceutical firms.

Unwarranted claims are made for a variety of products, including vitamins, vasodilators, antispasmodics, tranquillisers, muscle relaxants, and hypotensive drugs, and it is not only in the field of hæmatinics that deplorable polypharmacy is advised.

New products are put on the market far too soon and advertised enthusiastically before adequate clinical trials have been completed: substantial profits are often made before time proves the preparation to be of little value. Even firms of high repute "plug" their products and, at short intervals, send out prepaid reply postcards inviting samples. These are sometimes accompanied by highly selective extracts from the literature, with little or no mention of the risks involved.

I appreciate, of course, that not all firms conduct their business in this way, and also that the wealth of important and useful research cannot be financed without profits from ordinary medicines; but the need for research does not justify profits made without regard for human welfare. I also know that on occasion firms pay heed to private letters of advice or protest and modify the wording of their claims accordingly; but they evidently have great difficulty in dissociating the scientific from the sales departments.

It is for individual firms to set their house in order. Failing this, the only way to enforce ethical standards would seem to lie in public condemnation by name.

Edinburgh. R. W. D. TURNER.

SIR,—That someone of Professor Rosenheim's eminence should protest in your columns against certain drug advertisements is very heartening, and should encourage those of us who have been waging a private war against some of the excesses of the pharmaceutical industry. Many years ago I too complained unavailingly about the inclusion of folic acid in a "tonic" blunderbuss preparation.

May I suggest that medical journals are not always blameless in the advertisements they accept. Your own issue of Oct. 13 carries a full-page one for a slimming capsule that would do credit to a fashion magazine. An extract reads: "When weight reduction is a necessity, reducing diets introduce their own problems. Hunger pangs weaken the patient's will power. The risk of nutritional deficiencies can be very real." Accordingly the preparation embraces twenty-three separate ingredients including folic acid and fluorides, and the cost (not stated in the advertisement) works out at threepence a capsule.

It would appear that some of the less creditable concepts of modern salesmanship are being used by some firms to exploit the ever-widening field of the National Health Service; and glossy advertisements, specious statements, and high-pressure propaganda may weaken the resistance of the most careful doctor. In the pharmacological industry the word "ethical" has ceased to imply anything more than that a preparation is not advertised to the public. Costs are often increased unnecessarily because utilitarian preparations are replaced by more "elegant" ones, though it is a debatable point whether, in the ultimate, drugs are better buffered or suffered. Surely the basic cost of a medicine is an important item of information for the doctor; yet how seldom does an advertisement carry this. Too much of the spate of drug literature reaching the doctor through post, journal, and representative, draws on phoney pharmacology and pseudo-physiology, half truths and meretricious medicine, bringing not necessarily succour to the patient, but certainly discredit to the many conscientious pharmaceutical houses, embarrassment to the country's finances, and benefit only to some over-enterprising concerns. Heaven forbid it should happen; but if the pharmaceutical industry comes to be nationalised, it will at least have been partly to blame.

London, W.1. S. CHARLES LEWSEN.

*** We welcome sober criticism of any part of the conduct of our journal. Dr. Lewsen may agree with us, however, that the firms which use our advertisement columns are, like the writers who use our correspondence columns, entitled to a certain latitude. Neither the claims of our advertisers nor the opinions of our correspondents are necessarily endorsed by the Editor; but, provided they are not misleading or offensive, they must not be denied publication simply because we do not agree with them. From time to time we refuse to publish advertisements of new drugs on the ground that the case in their favour is not yet strong enough; yet even this conservative attitude can be hard to sustain when the drug in question is already widely used abroad and when the manufacturer insists that he is entitled to tell our readers that he can supply it if they want it. The greatest difficulty arises over novel mixtures of drugs which by themselves are of known worth but whose association in a single tablet or capsule may or may not be useful. Here we try to ensure at least that the components of the product shall always be stated clearly to the potential user, who, as a qualified doctor, must judge for himself whether it is likely to have merit. In admitting the conditional right of manufacturers to recommend such mixtures, we preserve our own right to say that we for our part think them undesirable: for example we have condemned repeatedly (and as recently as Oct. 6) the use of mixtures of hæmatinics. Though less convenient than the suppression of doubtful claims, such criticism seems sounder in principle—especially when one remembers that there was once (if only once) an advertiser who turned out in the end to be right though orthodox pharmacology had apparently proved him wrong.—ED. L.

CLINICOSIS

SIR,—You have certainly hit the jackpot in the correspondence on this subject, which raises questions that affect the foundations of the National Health Service.

The very fact that local-authority clinics are deemed necessary and are actively functioning is an admission of the partial failure of our general-practitioner services. Under an ideal system clinics should be an anachronism: the family doctor should be responsible for the total medical care of those on his list, and this care should include diagnostic, preventive, and therapeutic aspects. He should realise that certain groups of the community require special extra care and assistance and it should be within his terms of service to provide special sessions to care for his pregnant mothers, his infant and child patients, and for the elderly in his practice. It is gratifying to record that a considerable minority of family doctors are already providing these services quietly, automatically, and efficiently.

However, we are not concerned with this minority but with the provision of adequate preventive services for the whole community, and it is important to decide at once what our policy is to be—are we to go on enlarging and improving the scope of the present galaxy of clinics or are we to make some real and practical

efforts to organise these services in the field of general practice?

At present there exists almost a triplicated overlap over the provision of medical services. The hospital consultants, the public-health medical officers, and the family doctors are often treating or advising the same patients in differing fashions for the same medical conditions. The public expenditure, the wastage of time, and the mental confusion that results must be considerable.

A prime aim for the future must be to try to define the scope and purposes of the three medical branches in preventing and treating illness. In this definition we must, above all, avoid any overlap and encourage a spirit of closer coöperation. In a more coöperative climate there would be little need for clinics since their services could be carried out by the family doctors with suitable assistance from the local medical officers of health and their auxiliary staffs.

How are these ideal (but not I hope idle) dreams to be achieved? The problems and difficulties are many; but rather than be dismissed as impossible of solution they should act as a stimulus to our administrators and planners, central and local alike.

A *first* step must undoubtedly be towards seeking a better spirit of coöperation between family doctors and public-health workers. Here the local medical officer has an important rôle to play. He should accept the challenge and act his part as a coördinator of preventive services. He should be considered as a consultant in social medicine and be called out on domiciliary consultations, as other consultants are, to advise on difficult problems such as "the aged," the "problem families," the "unemployables," and so on. He should cease dabbling in clinical medicine and concentrate in coming closer to the family doctors in his area. He should make a point of visiting those in his area at regular and frequent intervals and discuss their problems and needs. The success and the future of the medical officer of health is in his own hands and depends on individual actions.

Similarly, the success of the general-practitioner services in this country depends on the 20,000 or so individual family doctors, and unless they likewise accept the challenge we are all in for a poor future. The *second* step I would suggest is to educate family doctors, present and future, to realise and appreciate their functions to provide a whole and total service for all the patients under their care. How this is to be done requires careful thought.

As a *third* practical and early measure to encourage family doctors to carry out the routine medical inspections that are at present being carried out by the clinics, some scheme of payment for each examination card received could be instituted, as in the case of vaccinations.

The essentials in all this are to decide exactly what we are all trying to achieve and then to achieve our aims in a spirit of coöperation.

Beckenham, Kent. JOHN FRY.

SIR,—It is obvious that the doctors who obtain (I will not say earn) their livings in the clinics will defend them. I think that very few family doctors would do so. Quite a proportion of our work consists in calming mothers who have been told at the clinic that their child has some terrible abnormality that needs urgent treatment. More than once I have been called to reduce a paraphimosis which the clinic doctor had produced and been unable to reduce herself. Other favourite diagnoses are undescended testicles when there are two normal orchids in the scrotum, knock-knees, bow legs, and enlarged tonsils. A few days ago, I was given a diagnosis of flat feet in an eighteen-month-old baby.

I have often asked my patients why they take their children to the clinic. Most of them say that they thought they had to, or that the health visitor had called and said they must.

Woldingham, Surrey. J. FABRICIUS.

THE PHYSICS OF SOME PULMONARY SIGNS

SIR,—I was much interested in the article by Dr. Buller and Dr. Dornhorst, who are, respectively, a lecturer and reader in medicine at St. Thomas's Hospital, in your issue of Sept. 29. Research to elucidate physical signs of heart or lung in terms of physics is extremely important, and I hope that these authors will continue their studies, however unrewarding they may appear to be; but it is their final paragraph which I wish to call into question.

Their conclusion "in these days of high-fidelity sound reproduction most students have some knowledge of acoustics, and in fact respond better to formulations of physical signs in terms of bass cuts and treble lifts than to the traditional jargon" I do not think is justifiable. I myself have questioned over fifty students as to the meaning of these terms, and I have only found one who has even the slightest real understanding of them. I therefore sincerely hope that the students of St. Thomas's are not taught chests in terms of "bass cuts" and "treble lifts." Even if half the students understand these terms—and, in fact, the proportion is very unlikely to be as high as this—how are the remaining half to be taught the complicated physics of sound? Moreover, what of examinations? How many examiners understand or will expect such a nomenclature?

What does the Professor of Medicine think of all this?

London, W.1. M. H. PAPPWORTH.

DERMATOLOGICAL OUTPATIENTS

SIR,—Dr. Herford, in his letter of Oct. 20, lists the complaints of his patients who visit dermatological clinics in and around London. There may be something in these complaints; but, if true, they must apply also to departments other than dermatological.

While there is no simple remedy for the usual overcrowding of skin departments, the explanation is straightforward. The numbers of patients wishing to be seen at short notice is such that it is impossible to stagger the appointments to the extent that no-one is kept waiting. The complaint of "a different specialist or assistant every time" is, I feel, exaggerated, but it may depend on the type of hospital to which the practitioner refers his patient. At a large teaching hospital the more unusual or interesting new cases are seen first by the chief or senior registrar; subsequently they may be followed up by a clinical assistant. In a large department there may be six or more dermatologists working at each session. More often than not, one may be away on holiday, for illness, or for some better reason, and his patients have to be seen by those remaining. Thus the "hurry," though I hope not "conflicting advice." Dr. Douthwaite, in this year's Croonian lectures,[1] underlines the difficulty of hospital outpatient practice when he says, ". . . the study of symptomatology is often best carried out in the peaceful atmosphere of the consulting room rather than in an out-patient department, where the silent pressure of an overfilled appointment list exerts a sense of urgency which is incompatible with clear thought." Certainly, those patients that Dr. Herford mentions, with an emotional background to their dermatitis, would be well advised to seek a private consultation if they can afford it; some enlightened employers appreciate this and pay for their key employees to be seen privately. Psychodermatoses are likely to remain unresolved in a busy outpatient department, and there is a limit to the patients that one can refer to the long-suffering psychiatrists.

From experience as a London teaching hospital registrar, and as a provincial consultant, I am sure that some patients would be better served by their local

1. Douthwaite, A. H. *Brit. med. J.* Oct. 20, 1956, p. 895; *Ibid*, Oct. 27, p. 958.

district hospital than by a more famous institution an hour or more away from their homes by tube or bus. The local dermatologist probably works single-handed, so that continuity is ensured; also he has a greater appreciation of local difficulties, both from the viewpoint of the patient and practitioner, and in proportion to the patients seen, he may have more skin beds at his disposal than the teaching hospital. One further point—I am sure some London practitioners could make more use of the domiciliary consultation service to the advantage of their skin patients.

Hove, Sussex. PATRICK HALL-SMITH.

CARELESS DEATH CERTIFICATES

SIR,—While I am in almost complete agreement with your note published last week under the heading of Medicine and the Law, I submit that you have misinterpreted in one respect the provisions of the Consolidated Regulations of the Registrar-General. By these the duty of refusing registration and notifying the coroner is placed upon the registrar when (inter alia) it appears from the death certificate that the practitioner has seen his patient neither within fourteen days of death nor after death. It would seem that either condition may satisfy the registrar; in practice, however, when the interval between the last attendance and death exceeds fourteen days the death is usually reported either by the practitioner or the registrar. When this is the case the existence of a certificate, possibly initialled by the practitioner in space "A" on the reverse, may enable the coroner to conclude his inquiry without post-mortem or inquest. I can envisage that such a situation might arise when a practitioner has been on holiday leaving a locum tenens in charge of a patient with known inoperable carcinoma.

R. IAN MILNE
H.M. Coroner,
Southern District, County of London.

NOTIFICATION OF INFECTIVE HEPATITIS

SIR,—While agreeing with Admiral Rainsford (Oct. 27) in advocating compulsory notification of homologous-serum jaundice, I disagree with certain points raised in his letter.

(1) The figures quoted for the incidence of jaundice are incorrect. These should have read 0·12% following small-pool plasma and 0·16% following whole-blood transfusions.

(2) Storage of liquid plasma at room-temperature, as advocated by Garrott Allen,[1] appears to inactivate the agent in plasma responsible for homologous-serum jaundice. My own experience has convinced me of the correctness of this view, while Hoxworth and Haesler [2] state that such plasma may be used without concern about the transmission of hepatitis.

(3) Dextran is undoubtedly an effective and valuable plasma-volume expander, but it is not as harmless as Admiral Rainsford implies. Apart from allergic reactions, it may cause hæmostatic defects.

(4) Admiral Rainsford claims that plasma is expensive and dextran inexpensive. I can only state that the cost of producing the liquid plasma to which I refer is considerably lower than the price at which commercial dextran is sold to hospitals.

I have no desire to obscure the real issue, which is the notification of infective hepatitis and homologous-serum jaundice, by starting a discussion on the relative merits of plasma and dextran. Both are valuable in the treatment of oligæmic shock, and it would be unfortunate if the views expressed by Admiral Rainsford resulted in the disuse of plasma.

Most cases of homologous-serum jaundice in this country at the present time follow the transfusion of whole blood or of concentrated red cells. Compulsory notification of the disease would help in the detection of the "dangerous" blood-donor who is harbouring the icterogenic agent in his blood.

Glasgow and West of Scotland
Blood Transfusion Service,
Glasgow, C.1. JOHN WALLACE
Regional Director.

1. Allen, J. G., Enerson, D. M., Barron, E. S. G., Sykes, C. *J. Amer. med. Ass.* 1954, **154**, 103.
2. Hoxworth, P. I., Haesler, W. E. 6th Congress of the International Society of Blood Transfusion, Boston, Mass., September, 1956 (in the press).

OPERATING-THEATRE STERILISERS

SIR,—Some of the statements made by Mr. Barrington Brock (Oct. 13) may cause misunderstanding. In their most valuable contribution to the prevention of theatre infections (Sept. 29) Professor Howie and Dr. Timbury included their discovery that the contents of individual packages in porous loads could be recontaminated during a vacuum-drying period in a dressing steriliser with defective air filtration.

Their findings make it clear that an adequate air filter must be fitted to dressing sterilisers where packaged goods are dried by the most rapid and least damaging technique available at present—i.e., with steam in jacket, a negative pressure is applied at one end of the chamber drawing dried and warmed but not hot air inwards through a bacteriologically adequate filter fitted opposite at the other end of the chamber, establishing a balance of about 5 in. Hg negative pressure for up to 30 minutes depending upon the nature of the load. It is also clear that the technique of "cracking" the door, and at the same time applying a negative pressure to chamber, must now be abandoned owing to the risk of recontaminating even a properly wrapped package. The third but relatively slow method for drying porous loads—i.e., merely reducing chamber pressure to gauge zero, leaving jacket at pressure and "cracking" door—is surely not "absurd." Since, in this technique, the vapour current within each package is from within outwards throughout intelligently conducted drying periods, is it not still theoretically a bacteriologically safe procedure? In a properly designed and operated apparatus it is certainly effective as far as drying is concerned.

That hot air and superheated steam is far more damaging to heat-sensitive surgical equipment than steam on the phase boundary at much higher temperatures, is now well established through universal experience. Pumping hot dry air at say 250°F through a load of fabrics in order to dry it is surely therefore definitely contra-indicated. In order to avoid heating the air too much, an effective practice is to attach the chamber filter with minimum length of piping.

During sterilisation at 250–254°F and 15–17 lb. per sq. in., a load of fabrics gains weight over normal hydrated weight at room-temperature to the extent of about 6%. This gain represents the weight of the infinitely thin film of condensate clinging to the entire surface of each constituent fibre at the end of the period of sterilisation. During drying with steam in jacket for up to 30 minutes by either of the two techniques now acceptable, this 6% gain falls to about 1·5% which is later lost by "sweating" while the load—still above 212°F on removal from the hot chamber—cools to room-temperature on slatted or wire-netting shelves. Considering the total amount of condensate to be evaporated during drying and cooling to room-temperature as 100%, only 4% can be accounted for by the sensible heat of the load itself becoming available during the fall in pressure to that of outside pressure at 212°F—i.e., (218–180)100÷971. 25% is accounted for by "sweating" after the load is removed from the chamber. The remaining 71% is evaporated by sensible heat acquired from the steam jacket during the drying period. On these grounds it may be stated that a steam jacket at about the same temperature as the steam previously used for sterilisation and a current of air to entrain evaporated load condensate are absolutely essential in drying porous loads if time and minimal damage is to be entertained. A vacuum and an effective air drying, warming, and filtering system accelerates the process.

If surgical-instrument and utensil boilers are to be called "sterilisers" and dressing-sterilisers "autoclaves," aeroplanes might reasonably be referred to as "automobiles." I think the term "autoclave" is best limited to its original use indicating apparatus designed before the development of balanced pressure steam traps (1920s) and having no gravity discharge operating automatically—e.g., (*a*) unjacketed pressure-cooker types of steriliser (1880s), Papins digester (1680), and copper

laboratory autoclaves (B.S. 2646 : 1955); (*b*) jacketed and vacuum-pressure-cooker designs (1890s). Use of the word "autoclave" in nominating other steam sterilisers, instrument washer sterilisers, &c., is confusing. I think that Professor Howie and Dr. Timbury might be interested to examine the steam sterilisers referred to by Mr. Barrington Brock as "capable of giving completely satisfactory results without many of the complications previously thought necessary"—the loads under discussion being, of course, the porous surgical equipment routinely required in hospital.

Department of Bacteriology,
Royal Infirmary, Edinburgh. J. H. BOWIE.

HERPES OPHTHALMICUS

SIR,—May I comment on Dr. Fison's article of Oct. 20? Firstly, I do not think this type of case is rare. Any large fever unit can show at least several similar cases in any year's admissions. Secondly, I think it can now be taken as established that herpes zoster and varicella are due to the same virus or to one which is both morphologically and antigenically indistinguishable. Hæmorrhagic necrosis is undoubtedly common in zoster, but also occurs in that form of varicella known as varicella gangrenosa. The scars left after such an attack are naturally much larger and more pigmented than in ordinary varicella, but cannot be said to constitute a different disease. The lesions in the case described could well fit such a picture.

Dissemination of lesions is certainly due to viræmia, but if a common ætiology be accepted, it is manifestly wrong to label widespread lesions elsewhere as herpetic, thus implying that they differ from those of chickenpox.

The appellation herpes is, in my view, bad, in that it leads to confusion (as possibly in the present instance) with herpes simplex to which it bears no relation except in name and gross appearance. It would be better to abandon it and call the disease by one of its other names —e.g., zona, or even zoster alone.

Ilford Isolation Hospital, Romford, Essex. I. M. LIBRACH
Medical Officer in Charge.

DETECTION OF SUBCLINICAL JAUNDICE

SIR,—Dr. Ivády and Mr. Ébrey (July 28) describe a simple procedure for quick detection of serum-bilirubin. I should like to relate my simple and quick procedure for detecting urinary bilirubin, which I have used for some years.

The reagents required are: (1) concentrated acetic acid; (2) a 0·5% solution of sodium nitrite (the B solution of Ehrlich's diazo reagent).

5 drops of acetic acid are placed in a test-tube and 4–5 ml. of urine is added. After shaking to mix, 3–4 drops of the nitrite solution are added and mixed gently. The presence of bilirubin is revealed by the immediate appearance of a green colour.

Of course there are many procedures for detecting bilirubinuria, but all require much more time and more complicated reagents and manipulations. Only tests with iodine solutions are about as simple as the one I have described; but in these tests the slight green colour has to be discerned through the brown iodine colour, when little bilirubin is present. In my procedure, with colourless reagents, the discrimination of a slight green colour is easier, especially if the test-tube is examined in its long axis. The test is quickly done. A more sensitive, but slower, test is to precipitate some 20 ml. of urine with 10 ml. of 10% barium chloride solution, filter, and drop on to any point of the precipitate, while on the filter, 1 drop of acetic acid and 1 drop of the nitrite solution. This test eliminates urobilin, which gives rise to a brownish colour when present in large amounts.

Istanbul, Turkey. Y. E. HUDAVERDI.

BREATH-HOLDING ATTACKS

SIR,—Your annotation of June 23 prompts me to record observations on two children whose father had himself been a "breath-holding" infant.

I saw the boy in several attacks during his first two years of life. When he was allowed to come out of the attacks without any assistance or interference, they lasted from 10 to 45 seconds. While his lips, nose, and ear lobes were bluish, his cheeks and his sclera were "grey-blue." He frequently foamed at the mouth, and the limpness following the attack was often accompanied by relaxation of the sphincters. The attacks were also seen by other doctors, one of whom told the mother that he would die in one of them.

The girl, two years younger, was free from the attacks until she reached the age of 11 months when the boy "trained" her. On one occasion he advised her to hold her breath if she ever wanted any sweets.

Both children have grown up into A1 citizens. The girl now has a son who at 13 months of age has shown no tendency to "breath-holding."

Johannesburg, South Africa. L. D. ADLER.

ANARTHRITIC RHEUMATOID DISEASE

SIR,—Cranial (giant-cell) arteritis has been mentioned by Dr. Bagratuni (Oct. 6) and by Dr. Kersley (Oct. 20) in discussing the ætiological possibilities. Dr. Bagratuni appears to have dismissed it. I have seen several similar cases to those described in the past four years, and have been struck by the following points:

(1) The frequent development in them of the cranial manifestations of arteritis after weeks or months; head pains may be a late manifestation, but neck pains an early one.

(2) Biopsies of affected arteries are not always positive, though the clinical picture of red, painful, tender vessels and response to steroids leaves no doubt about the correctness of the diagnosis.

(3) Patients who have had cranial arteritis may relapse after a period of steroid therapy in a form without cranial manifestations, closely resembling the anarthritic rheumatoid condition described. Fever, malaise, muscle pain, and mental symptoms predominate, the E.S.R. being invariably high. Antibiotics and salicylates fail to control the disease, but steroids promote an immediate response.

(4) There is a history of precipitating stress, usually emotional.

These observations emphasise the known fact that cranial manifestations are an incident in generalised disease, and often a late one, and I suggest in some instances may not appear at all or be overshadowed by other symptoms. If Dr. Bagratuni's patients are observed, I think some will develop the stigmata of giant-cell arteritis.

East Suffolk and Ipswich Hospital. J. W. PAULLEY.

THE GREATER MEDICAL PROFESSION

SIR,—Dr. Fox (Oct. 13) touches only lightly on the nursing profession. Mr. Trillwood (Oct. 27) does not mention them. I am not sure whether Dr. Fox sees nurses as part of the Commonwealth of the Greater Medical Profession, but Mr. Trillwood's division of the hospital into "treatment" and "housekeeping" ignores their rôle completely.

A doctor prescribes treatment—operative, pharmacological, physical, or biochemical—which is carried out by, or with the assistance of, medical auxiliaries, rightly subordinate to him, or by the nursing staff. All the time, however, he relies upon the existence of a framework of organisation and morale within which he can work for the patient's recovery. It is not merely a matter of supplies, catering, and domestic services; but also of inter-personal relationships, "atmosphere," and the creation—even (and lately more and more) in a general hospital—of a therapeutic community.

This cannot be a lay function. Doctors are nowadays more anxious to lay down administrative burdens than to acquire new ones. The nurse is ideally placed—or would be, if her potentialities were fully exploited. I envisage her with, as now, a grounding in medical science, but prepared more thoroughly than at present for personnel and community administration.

The danger is that overemphasis on minor medical techniques may imperil the orientation of the nurse towards this line of professional advance. Again, laymen who seek to extend their reponsibilities for the "business" aspects of hospital administration are likely to turn the hospital into a therapeutic assembly-line rather than a therapeutic community treating the whole patient.

Nursing has never been a medical colony; it has never been a hostile nation. But, too close for comfort, too independent for colonisation, medical men have never known quite what to do with it. I suggest they encourage it to evolve as a powerful ally to preserve some of the delicate balance between medical and lay influence conceived by the Bradbeer committee to be the proper basis of the hospital as a clinic, an economic entity, and a community of patients and staff.

London, S.W.17. BRIAN V. WATKIN.

Public Health

"Nottingham Meningitis"

THE note we published under this heading on Oct. 20 was unofficial, being based on the observations of a clinician whom we asked for information. In some respects these observations differ from those of other practitioners in the city, as collated by the public-health department, and Dr. William Dodd, the medical officer of health, thinks our picture of the disease in some respects misleading. We are indebted to him for the following account of it:

An epidemic meningitis has been observed in the Nottingham area during the past six months. It appears to affect primarily children and young adults. There have been about 200 hospital admissions. The number of cases in the population at large is difficult to assess, as mild and abortive cases undoubtedly occur. Multiple cases in family groups have been common.

The onset of the disease is sometimes insidious. First symptoms are usually nausea and headache. The headache becomes severe, nausea progresses to vomiting, and signs of meningeal involvement can be elicited. This stage is frequently accompanied by a rash, often very similar to that of rubella. The temperature may be considerably elevated for several days. There may be lymph-gland enlargement. Prostration may be considerable but convalescence is usually uninterrupted, and no sequelæ have been observed. There is no specific treatment. Differential diagnosis can be difficult without lumbar puncture.

Laboratory findings in the typical cases are as follows. The cerebrospinal fluid is turbid and may contain as many as 2000 cells per c.mm. Up to 50% of these may be polymorphs. The total protein is only slightly raised. Sugar and chlorides are normal. Cultures are sterile. Other investigations including blood-counts, Paul-Bunnell tests, complement-fixation tests for known viral pathogens, and tissue-culture for poliomyelitis virus have not been helpful.

Material from cases is being examined for the presence of other pathogens. It is premature to comment on the results of these investigations.

Dr. Dodd agrees that the clinical picture may vary; but he differs from our informant in saying that vertigo and nystagmus have not been observed, that vomiting is not rare, and that rashes and lymphadenopathy are common.

Obituary

ALFRED EDWARD BARNES

M.B.Lond. & Sheff., F.R.C.P.

Dr. Barnes, professor of medicine in the University of Sheffield from 1936 to 1946, died at Helensburgh, Dunbartonshire, on Oct. 23, at the age of 75.

He was born in Sheffield and educated in the city at the grammar school and University College, to which he gained an entrance scholarship. In 1903 he took the degree of M.B. Lond. and from 1905 to 1907 he was house-physician at the Sheffield Royal Infirmary. He was then granted a research scholarship by the British Medical Association. In 1907 he took the M.R.C.P., and in 1908 he was given the degree of M.B. Sheff. *ad eundem*, at the first degree congregation of the new university. After a term at the Royal Infirmary as its first medical registrar he was appointed an honorary physician in 1911. During the 1914–18 war he served on the staff of the 3rd Northern General Hospital, T.F., and later went to Salonika in charge of the medical division of the 37th General Hospital. After his return he became senior physician to the hospital in 1920, and the following year he was elected to the fellowship of the Royal College of Physicians of London.

Professor Barnes gave distinguished service to the University of Sheffield as a teacher. After acting as medical tutor he became lecturer in materia medica, pharmacology, and therapeutics, but on his return from war service he resigned his lectureship so that a full-time professor could be appointed. As a result in 1920 Dr. (later Sir Edward) Mellanby, F.R.S., was appointed to the chair. A little later Barnes was largely instrumental in obtaining for Professor Mellanby a field laboratory at Lodge Moor, near Sheffield. In 1936 he was himself appointed professor of medicine. On his election he reorganised the teaching of medicine in the Sheffield medical school with lasting benefit to the curriculum. He was an external examiner in medicine to a number of universities. His notes on cases were always instructive, but to the consternation of his colleagues were usually written in shorthand. For some years he was a part-time medical officer to the Sheffield education committee and he sat on the Sheffield panel committee from 1912 to 1946. He was a member of the Association of Physicians of Great Britain and Ireland. Though his life was devoted to the practice of clinical medicine he was always mindful of the importance of research and used his influence to secure for the Sheffield school the services of distinguished research-workers.

A. G. Y. writes: "Alfred Barnes was a stimulating teacher and encouraged his students to think for themselves. He was an omnivorous reader and his knowledge of medical literature was almost encyclopædic. Throughout his life he was receptive of new ideas and always eager when possible to put them to the test. He was critical of anything in the practice of medicine or in medical ethics which did not conform to his own very high standards and he set an example of the highest professional integrity. The high esteem in which he was held was shown by the frequency with which members of his own profession sought his help for themselves or their families in times of sickness. He was a general physician and would have rejected the idea of being classed as a specialist in the modern sense, but he did interest himself particularly in gastro-enterology and became a noted authority on the subject.

"He was widely read in general literature and particularly in history and his views on past and current events were often original. He loved the English and

Scottish countrysides in all their moods and usually spent his holidays in one or the other. Many years ago I accompanied him on a walking tour in the English Lake District and I well remember how, after leaving the smoke of his native city behind, he rejoiced equally in the storm clouds over Windermere, the harvest moon in Langdale, and the blinding rain over the Stye Head Pass."

Professor Barnes married in 1911 Miss Jessie Morrison. There were two sons of the marriage.

SAMUEL RICHARD ARMSTRONG
O.B.E., M.B. Belf.

Dr. Armstrong, who died on Oct. 15, graduated from Queen's University in 1913, and he spent all his professional life in the city, practising as a family doctor. He was also physician to the Dufferin Children's Hospital and to the Ulster Schools for the Deaf and Blind. For his work at a casualty-clearing station in France during the 1914–18 war he was appointed O.B.E.

A colleague, who was an assistant to him for two years, writes: "It has been gratefully said that Dr. Armstrong cared responsibly for every patient; he had a great interest in their homes and families, relatives and relationships, the occupations and welfare of each. He had a severe myocardial infarction at the age of 43 and it was an index of his morale and force of character that he took up his practice again single-handed. He had an immense fund of experience and wisdom, and the hallmarks of his work were painstaking attention to detail combined with a precise knowledge of the latest publications on research; he expected these qualities of those who worked with him, were they consultants or assistants."

Dr. Armstrong leaves a widow, two daughters, and a son who qualified recently.

Appointments

CUST, GEORGE, M.B. Leeds: deputy M.O.H. and deputy principal school M.O., Dewsbury.

DONALDSON, A. A., L.R.C.P.E., D.M.R.D.: consultant radiologist, neurosurgical unit, based on Royal Infirmary, Edinburgh.

DUGUID, HELEN L. D., M.D. Aberd., D.PATH.: assistant pathologist, Maryfield Hospital, Dundee.

HARROWES, W. M. C., M.D. Glasg., M.R.C.P.E., D.P.M.: consultant psychiatrist, Royal Edinburgh Hospital for mental and nervous disorders.

JONES, E. G. R., M.B. Manc., D.A.: part-time assistant anæsthetist (S.H.M.O.), West Manchester group of hospitals.

POINTON, R. C. S., M.B. Camb., F.F.R., D.M.R.T.: consultant radiotherapist, Christie Hospital and Holt Radium Institute, Manchester.

RAVERTY, S. J., L.R.C.P.I.: registrar in psychiatry, Ipswich and East Suffolk Hospital.

RITCHIE, R. T., M.B. Edin., M.R.C.P.E.: assistant chest physician, tuberculosis service, Dundee.

WHITEHEAD, B. F., M.B. Camb., D.P.M.: assistant child psychiatrist, Cambridge area.

WILKINSON, R. W., M.B. Leeds, F.F.R., D.C.H.: consultant radiologist, Reading area hospitals.

WOOD, MARGARET T., M.B. Birm., D.OBST.: assistant M.O. for maternity and child welfare, Cleethorpes area of Lindsey.

Birmingham Regional Hospital Board:

GORDON, E. G., D.PATH.: consultant pathologist, Dudley and Stourbridge group of hospitals.

FLEMING, A. C., M.B. Durh., D.P.M.: consultant psychiatrist and deputy medical superintendent, St. Margaret's Hospital, Great Barr.

SCHOOLING, I. BRENDA, M.B. Lond., F.F.A. R.C.S., D.C.H., D.A.: consultant anæsthetist, Birmingham (Selly Oak) group of hospitals.

THOMAS, E., M.B. N.U.I., F.F.A. R.C.S., D.A.: senior consultant anæsthetist, Birmingham (Selly Oak) group of hospitals.

Colonial Appointments:

ANDERSON, JANET W., M.B. Aberd., D.OBST.: special grade M.O., Uganda.

BRYSON, D. D., M.B. Glasg., D.P.H.: M.O.H., Jamaica.

CAMPBELL, F. A., L.R.C.S.I., D.P.M.: superintending M.O., mental hospital, Trinidad.

COOPER, W. E., M.B. Lpool: M.O., Barbados.

COX, T. A., M.R.C.S.: M.O., ministry of health, Gold Coast.

HARBIN, LEONARD, M.R.C.S.: M.O. (grade C), health department, Trinidad.

PARSONS, G. A., M.B.: M.O., Kenya.

RIET, J. VAN T., M.D. Utrecht: district M.O., Windwards, St. Vincent.

Diary of the Week

NOV. 4 TO 10

Sunday, 4th

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, University Street, W.C.1
10.15 A.M. Dr. H. A. Burt The Rheumatic Diseases.

Monday, 5th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. H. S. Banks: Recent Advances in Infectious Fevers.

Tuesday, 6th

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
3.45 P.M. Prof. R. J. Last: Form and Function in Muscles. (Arnott demonstration.)

UNIVERSITY OF LONDON
5.30 P.M. (University College, Gower Street, W.C.1.) Prof. W. A. Robson, LL.M.: The Welfare State. (Hobhouse lecture.)

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Douglas MacLeod: Differential Diagnosis in Gynæcology.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Mr. W. J. Dempster: Homotransplantation of Organs.

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. R. F. Tredgold: Preventive Psychiatry.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. J. A. Dudgeon: Rôle of Viruses in Dermatology.

Wednesday, 7th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.15 P.M. *History of Medicine.* Prof. John Boyes: History of Dentistry and Medicine in Newcastle. 1700–1900: Dr. Bryn Thomas: A Jenner Letter.

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. G. M. Bull: Quantitative Assessment of Renal Function.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Dudgeon: Rôle of Viruses in Dermatology.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. I. S. Longmuir: Application of Polarographic Analysis to the Study of Cellular Respiration.

ASSURANCE MEDICAL SOCIETY
5 P.M. (11, Chandos Street, W.1.) Sir Charles Symonds: Fits and Fainting.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. (Medical School, Manchester University.) *Pathology.* Dr. E. L. Peel: Plasma Cells and Plasma Proteins.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH, Edinburgh, 8
3.30 P.M. Prof. W. E. Adams (Chicago): Some Hazards and Corresponding Safety Measures in Thoracic Surgery for Elderly People.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (Royal College of Surgeons, 18, Nicolson Street, Edinburgh.) Prof. E. C. Mekie: Singapore, 1935–1955.

Thursday, 8th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. William Phillips: Disintegrative Action of the Nervous System. (Bradshaw lecture.)

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. S. A. S. Malkin: The Conquest of Disability. (Robert Jones lecture.)

ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology.* Mr. H. E. Hobbs, Dr. Helen Dimsdale, Dr. David Sutton: Neuro-ophthalmological Aspects of the Cerebral Angiomas.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Prof. C. G. Rob: Arterial Substitutes.

ROYAL EYE HOSPITAL, St. George's Circus, London, S.E.1
5.15 P.M. Dr. T. H. Whittington: Myopia and Myopic Patients.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Rôle of Fungi in Skin Disease.

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, Queen Victoria Street, E.C.4
5 P.M. Dr. G. S. Wilson: B.C.G. Vaccination.
6.15 P.M. Dr. W. R. S. Doll: Present Knowledge of Causation of Cancer of the Lung.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Mr. P. Rom, L. ès. L.: Vaihinger's Fictionalism and Individual Psychology.

NUFFIELD ORTHOPÆDIC CENTRE
8.30 P.M. (Wingfield-Morris Orthopædic Hospital, Oxford.) Mr. John Charnley: Arthrodesis of the Hip in Three Weeks.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *History of Medicine.* Dr. A. Morgan Jones: Dogma and Experiment in Harvey's Time.

HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Prof. G. A. Smart: The Nephrotic Syndrome.

ST. ANDREW'S UNIVERSITY, Queen's College, Small's Wynd, Dundee
5 P.M. Dr. Joan Taylor: Infective Bacterial Diarrhœa of Infants.

Friday, 9th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
9 A.M. Professor Bull: How to Pass Examinations Without Actually Cheating.
10 A.M. Mr. J. E. A. O'Connell: Surgery of Intractable Pain.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Dr. C. H. Edwards: Neuralgias and Headaches.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, Edinburgh, 2
5 P.M. Dr. W. Ferguson Anderson: Care of the Elderly Sick in General Practice. (John Matheson Shaw lecture.)

Notes and News

ACCOMMODATION IN MENTAL HOSPITALS

LAST year the number of mental-hospital beds out of use owing to lack of staff increased by 148 to 913. Moreover, the annual report [1] of the Board of Control adds, many of the wards kept open only under a heavy burden of understaffing. There seems little hope of immediate improvement because "the position as regards student nurses remains serious . . . and numbers under training declined rather more than during 1954." There were 1400 men and 1962 women under training at the end of the year. The report says that the number of patients in mental hospitals, excluding former public-assistance institutions, decreased by 1047 during 1955 to 139,440. The hospitals were overcrowded to the extent of 17,965, or 967 less than at the end of 1954. It is hard to judge from this figure alone just how bad the situation is: as we remarked last year,[2] it would be a considerable help if the Board of Control were enabled to publish a more detailed annual report.

INTERNATIONAL TUBERCULOSIS CONTROL

THE World Health Organisation has published the report [3] of a group which studied the exchange of information about tuberculosis among various European countries. The group agreed that comparable statistical data were the first essential, and considered definitions of terms and the need for their qualification. It recommended that a national register of cases should be set up in each country, which would be the source of data for indices of incidence and lethality; or, if a reliable register could not be set up, an index based either on tuberculin testing by an agreed technique, or on a complete examination (including mass miniature radiography with dual reading) of samples of population.

The group distinguished between countries with a low and with a medium incidence, and recommended various methods of case-finding accordingly. Where there is a low prevalence, examination of total population groups may be less profitable than examination of special groups such as hospital patients, old men, and students.

The study-group agreed that B.C.G. vaccination is a useful supplement to other means of control, but could not agree as to its best application. It emphasised that patients should be encouraged to enter hospitals and sanatoria, but did not expect any increase in the number of beds needed.

Appendices to the report suggest the information needed for a tuberculosis case-register, and a code of classification of bacillary and X-ray findings.

CARDS IN GOOD CAUSES

IT is said that Sir Henry Cole, considered to be the originator of Christmas cards, sent them only to friends whom he had not time to visit or write to personally. Today some people would feel slighted if they were sent a letter at Christmas rather than a card. Perhaps the best of all are the ones made by the sender himself, but those of us who have to buy them can combine this with helping a good cause. This year again many charitable bodies plan to raise funds, and at the same time publicise their work, by selling greetings cards and seasonable gift wrappings.

An interesting collection, new to us, is of cards designed by disabled painters, using either mouth or foot to hold the brush. A group of 6 cards, showing chiefly pastoral scenes in colour, costs 4*s*. 6*d*. from Painted Postcards Ltd., 9, Inverness Place, London, W.2. A rather different selection of cards is issued by the National Marriage Guidance Council (78, Duke Street, Grosvenor Square, W.1) including a charming picture of Father Christmas by Pearl Falconer, whose Nativity drawing has been praised in these columns. Outstanding reproductions in this series are of a group of mummers from a 14th-century manuscript, and of Raphael's "Madonna with the Pomegranate" from the Albertina collection. These and others are illustrated on the order form which gives prices. Once more the Grenfell Association (66, Victoria Street, S.W.1) has several attractive cards, described in a leaflet, price 2*d*. The association hopes to raise money to build a nursing station for the benefit of Eskimos in northern Labrador. The National Association for Mental Health (38, Queen Anne Street, W.1) has repeated, at 6*s*. 9*d*. a dozen, several designs published last year; the new ones include a detail of Botticelli's "Mystic Nativity" in the National Gallery, London.

Those who brighten their envelopes with seals can choose from the winter scenes of children put out at 4*s*. a hundred by the National Association for the Prevention of Tuberculosis, Tavistock House North, W.C.1 (which also has Christmas cards), and from the books of 120 issued at 10*s*. by the National Spastics Society (28, Fitzroy Square, W.1). These seals are up to date enough to include one showing Santa Claus trying to hitch-hike by space ship.

The University Federation for Animal Welfare is again selling a collection of Christmas stationery designed by Fougasse and books illustrated by him, which can be obtained from 7A, Lamb's Conduit Passage, W.C.1. The wrapping paper, ribbon, gummed labels, seals, blotter, and postcards all carry animal pictures in the artist's famous style. There is a series of greetings cards with jovial depictions of good will towards animals: if the lion does not quite lie down with the lamb, he dances with the porcupine, and the cat sits with the mouse by an amiable fire.

Whoever wishes to combine Christmas greetings with a modest contribution to a worthy organisation has a wide choice this year.

A NEW FACTORY

THE London Transport Executive has recently opened a factory at Aldenham for the regular overhaul of its buses, as well as for repairing those damaged in accidents. The attractive group of buildings in the welfare and recreation section includes a works surgery which was planned to meet the needs suggested by previous experience, and is staffed by qualified nurses. A doctor, who helped to design the surgery, visits the plant weekly, and serious emergency cases are treated as required at a nearby hospital.

The nature of the work at the plant is such that there are few accidents. First-aid boxes are maintained throughout the factory, with supplies of a buffer solution where appropriate for the treatment of any caustic splashed in the eye; workers are instructed in their use. A possible hazard to health is the spraying section where the bodies of the buses are painted. The risk is reduced by using paints which are almost benzene-free and contain only minimal quantities of lead; the sprayers wear masks which absorb at least the larger particles, and have six-monthly physical examinations and full blood-counts. Efficient ventilation ensures that any spray which bounces off the vehicles is carried away from the workers by a downdraught. So far there has been no evidence of toxic effects.

University of Oxford

At a congregation on Oct. 18 the degree of M.CH. was conferred on B. V. McEvedy.

University of Cambridge

On Oct. 20 the following degrees were conferred:

M.B., B.Chir.—J. E. Davies, G. B. C. Jones.
M.B.—H. C. I. Bywater, P. M. Jones, E. A. H. Smith (by proxy); Gordon Brocklehurst.

National University of Ireland

Dr. E. F. McCarthy has been appointed to the professorship of physiology and histology at University College, Dublin, and the degree of M.D. has been conferred on him for published work.

Royal Australasian College of Physicians

The following were admitted to the membership of the college on Oct. 9:

A. G. Zaver (Queensland); C. S. H. Reed, D. E. Smith, N. J. Yorkston (New South Wales); C. W. Baird, R. H. D. Bean, J. L. Blunt, A. C. L. Clark, R. K. Doig, W. H. Orchard (Victoria); N. D. Abbott, R. G. Gold, P. M. Last (South Australia); D. D. Letham (Western Australia).

Welsh National School of Medicine

Mr. L. P. Thomas has been appointed senior lecturer in surgery, and Dr. H. E. F. Davies lecturer in medicine.

Research Defence Society

Prof. A. A. Miles will deliver the Stephen Paget lecture to this society on Tuesday, Nov. 27, at 5.30 P.M., at University College, Gower Street, London, W.C.1. He is to speak on resistance to infection—the experimental approach.

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1. Annual Report of the Board of Control to the Lord Chancellor for the Year 1955. H.M. Stationery Office. Pp. 8*s*. 6*d*.
2. *Lancet*, 1955, ii, 807.
3. Tuberculosis Control: Plans for Intensified Inter-country Action in Europe. September, 1956. Pp. 14. Obtainable from H.M. Stationery Office at 1*s*. 9*d*.

Royal College of Physicians of London

At a comitia held on Oct. 25, with Sir Russell Brain, the president, in the chair, Dr. D. H. Brinton, Dr. R. M. B. MacKenna, Dr. K. Robson, and Dr. J. McMichael were elected councillors. Dr. J. Forest Smith was re-elected representative on the Committee of Management. Sir Russell Brain, Sir Harold Boldero, Dr. W. G. Barnard, and Sir Allen Daley were re-elected members of the standing joint committee of the three Royal Colleges, and Dr. S. R. F. Whittaker was elected. It was announced that Dr. Cicely Williams had been appointed Milroy lecturer for 1958, and that her subject would be Social Medicine in Developing Countries.

The Conway Evans prize was presented to Lord Adrian, O.M., F.R.S.

A message of greeting was sent to the College of Physicians and Surgeons of South Africa, on the occasion of its inauguration.

The following were admitted to the membership:

C. P. Aber, M.B. Leeds, F. J. Brunton, M.B. Lond., Margaret H. Buston, M.B. Brist., W. R. Cattell, M.B. Edin., R. H. Culpan, M.B. N.Z., Andrew Doig, M.B. Edin., A. G. Emslie, M.D. Aberd., D. A. P. Evans, M.B. Lpool, I. R. Ferguson, M.B. Queensland, H. G. Gallagher, M.B. Sydney, H. T. Goodman, M.B. Sydney, R. V. Grange, M.B. Camb., E. C. N. Gray, M.B. N.Z., R. G. Hardwick, M.B. Lond., W. B. Hudson, M.B. Witw'srand, R. G. Huntsman, M.B. Camb., D. N. S. Kerr, M.B. Edin., I. H. Kerr, M.B. Camb., Priscilla S. Kincaid-Smith, M.B. Witw'srand, E. G. Knox, M.B. Durh., W. R. Little, M.B. Lond., Lavinia W. Loughridge, M.B. Belf., Anne Maguire, M.B. Lond., Gerald Sandler, M.B. Lond., H. M. Saxton, M.B. Lond., P. J. Taylor, M.B. Lond.

Licences to practise were conferred upon the following 117 candidates who have passed the final examination of the Conjoint Board:

J. A. Aitken, I. F. Anderson, Joan Andrews, F. A. Awobodu, P. C. Barrington, Fereydoon Batmanghelidj, M. R. Bicknell, S. J. L. Black, D. G. Boddington, A. T. Brain, A. R. Broadbent, Sheila M. Brodie, Ann C. Butler, D. J. M. Chastell, E. W. Colley, R. A. Colwell, J. R. M. Copeland, L. K. Cordeaux, S. R. Coverley, W. A. Crawford, Andrew Crowcroft, C. D. W. Davies, J. B. Dawson, P. A. Debenham, J. M. D. Dixey, I. H. Dunlop, Barry Dunn, H. J. Eldridge, M. T. Everett, Wendy J. M. Fidgeon, H. B. B. Forshaw, H. L. H. Frankel, J. N. Garrett, J. P. Giles, J. M. L. Goddard, Rose Gold, Paula J. H. Gosling, N. G. A. Gracey, Doreen Greene, M. T. F. Griffiths, F. B. Grossmark, C. D. M. Hamilton, D. P. S. Heath, Maureen J. Hodgson, John Homi, A. M. Horn, Frank Horsfield, H. V. Hughes, Shirley Y. Hughes, N. O. Hunter, A. R. Hyett, E. A. Ikomi, M. T. Inman, J. N. Insall, G. A. Irving, P. L. James, R. W. Jenkins, J. S. P. Jones, M. I. Kalu, R. C. Kempster, N. D. Kilpatrick, D. H. King-Davies, Kalya Kitiyakara, J. M. J. F. D. Lalouette, Rosemary Lane, S. C. Latham, Enid S. Legrange, D. F. Lewis, Sheila R. Lewis, D. C. Lishman, A. G. Lloyd, J. K. Mills, Alison E. A. Monroe, Priscilla A. Mottram, F. H. Muir, J. F. W. Mundin, Richard Neville, F. A. Newton, B. B. Obeng, Marjorie M. Ogg, Adeleye Okuboyejo, S. L. Price, P. E. Putnam, Patricia B. J. Reardon, Warren Redding, Gloria H. Roberts, Desmond Rosborough, R. G. Rowe, Audrie M. Sanders, Maria Schaffner, A. M. Segal, A. C. H. Sesemann, P. H. W. Sheard, Umaru Shehu, J. D. G. Sloss, D. M. Smith, E. E. Smith, T. B. Snell, J. V. Sowton, J. M. Spence, Gillian D. Standen, D. R. P. Starr, Geoffrey Storey, D. W. P. Thomas, I. R. Thornber, Pamela M. Thorne, Sheila M. Tillott, A. S. Townsend, D. S. Tucker, Jean E. Vallis, M. A. Verity, Tessa M. Warholm, Audrey J. Wheeler, Constant Wilke, A. A. Wilkinson, G. B. Williams, A. S. Wilson.

Postgraduate diplomas were conferred on those named in the report of the Royal College of Surgeons in our issue of Oct. 20 (p. 847) and on the following:

D.I.H.—Santi Bhusan Gupta Choudhuri.
D.O.—Ramjee Pandey.
D.P.H.—Sachindra Kumar Biswas.

Royal Society of Medicine

On Friday, Nov. 16, at a meeting of the section of epidemiology and preventive medicine, Dr. Percy Stocks will be presented with the Jenner medal.

British Postgraduate Medical Federation

The governing body of this federation invites applications for postgraduate travelling fellowships from doctors and dentists who are training as specialists. Further particulars will be found in our advertisement columns.

International Congress of Dermatology

The eleventh International Congress of Dermatology will be held in Stockholm from July 31 to Aug. 6 next year. Further particulars may be had from Dr. Malcolm Tottie, Karolinska Sjukhuset, Hudkliniken, Stockholm 60, Sweden.

Training of Mental Defectives

An open meeting on this subject will be held at the Fountain Hospital, Tooting Grove, London, S.W.17, on Wednesday, Nov. 7, at 5.30 P.M. The speakers will include Dr. A. D. B. Clarke and Mr. J. Tizard, PH.D., and Dr. B. H. Kirman will be in the chair.

Ministry of Health

The Minister has appointed Mr. John Arbuthnot as his parliamentary private secretary.

Royal Society of Arts

On Wednesday, Nov. 21, at 2.30 P.M., at the house of this society, John Adam Street, Adelphi, London, W.C.2, Mr. A. Dickson Wright will speak on Quacks through the Ages.

Royal Appointment

Surgeon Rear-Admiral S. G. Weldon has been appointed an honorary physician to the Queen in succession to Surgeon Captain D. H. Kernohan.

Board of Control for Scotland

Dr. Patricia O'Kane has been appointed a deputy commissioner of the board. She was formerly assistant medical officer for mental services in the health and welfare department of Glasgow Corporation.

Hospitals' Symphony Orchestra

This orchestra will give its third concert of the year on Saturday, Dec. 1, at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2, at 7.30 P.M. Further information may be had from Mr. Stephen Taylor, St. Thomas's House, Lambeth Palace Road, S.E.1.

International Congress of Nutrition

The fourth International Congress of Nutrition will be held in Paris from July 26 to Aug. 1, 1957, under the presidency of Prof. E. Terroine. Further particulars may be had from the Centre National de Coördination des Études et Recherches sur la Nutrition et l'Alimentation, 71, Boulevard Péreire, Paris 17e.

London Medical Orchestral Society

The London Medical Orchestra is holding a concert at B.M.A. House, W.C.1, on Nov. 24 at 8 P.M. in aid of the Cancer Relief Fund. Tickets (10*s.*, 7*s.* 6*d.*, 5*s.*) may be had from the hon. secretary, 6, Oxford Court, W.3, and at the door.

Contraceptive Technique

A lecture-film demonstration for final-year students from London medical schools will be given at University College Hospital Medical School, London, W.C.1, on Friday, Nov. 9, at 5.30 P.M. Prof. W. C. W. Nixon will be in the chair and Dr. Sylvia Dawkins will speak.

Prevention of Occupational Dermatitis

The Joint Advisory Council for Occupational Health is holding a conference on this subject at the Royal Pavilion, Brighton, on Saturday, Nov. 17, at 3 P.M. The speakers will include Dr. Twiston Davies and Dr. L. P. Bourne. Further particulars may be had from Dr. W. S. Parker, hon. secretary, of the council, Health Department, Royal York Buildings, Brighton, 1.

Biology of the Hair Follicle and the Growth of Hair

An international conference on this subject will be held in London from Aug. 7 to 9 under the auspices of the British Society for Research on Ageing.

It will deal with the gross and microscopic anatomy and histochemistry of the hair follicle and the hair, studies on mitoses of the hair follicle and effects of nutrition and hormones on hair growth, vascularity and patterns of growth, production of pigment, regeneration, and de novo formation of hair follicles. The proceedings will be published in book form.

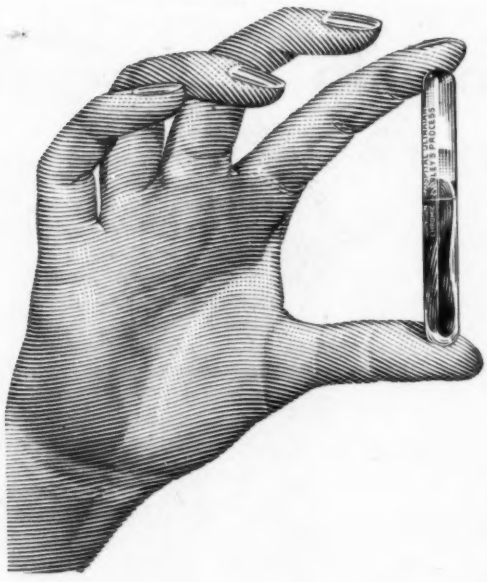
Tickets (free) may be had from Mr. G. H. Bourne, D.SC., hon. secretary of the society at the London Hospital Medical College, E.1, before April 30.

At the request of the Foreign Office, Mr. H. J. Seddon will be visiting Buenos Aires towards the end of November, at the invitation of the Argentine Government, to advise on methods of treatment and rehabilitation in connection with the serious outbreak of poliomyelitis that occurred early this year. Five British physiotherapists and one occupational therapist have been working in Buenos Aires under the Rehabilitation Commission since June.

The Schweitzer medal of the Animal Welfare Institute of New York has been presented to Major C. W. Hume, director of the Universities Federation for Animal Welfare.

Mr. Irs Hiscock, D.SC., chairman of the school of public health, Yale University, and president of the American Public Health Association, has been awarded an honorary fellowship of the Royal Society of Health.

Peripatetic Solution—The patient was a pavement artist.



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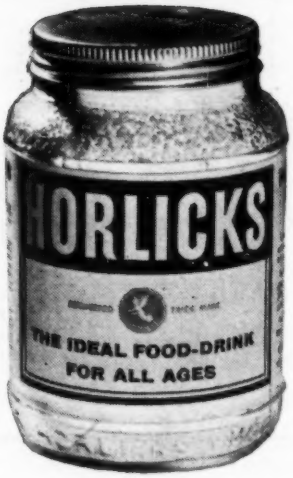

Detergents and the skin

"We have found . . . that the incidence of skin trouble attributable to synthetic detergents is no higher than that previously due to the use of soap products, alkalis and allied preparations"

REPORT OF THE GOVERNMENT COMMITTEE ON SYNTHETIC DETERGENTS, 1956

THE VITAL ROLE OF DETERGENTS TO-DAY

Since their introduction six years ago the new washing products, now generally known as "detergents," have revolutionised British household washing. This is because they give superior performance in hard water, leave clothes and dishes demonstrably cleaner, and leave no dulling film as soaps usually do.

Women have been quick to appreciate these advantages. Thus, while the first weekly wash detergent (Tide) only achieved national distribution in September 1952, detergents as a whole now account for more than half of the total washing powder market. They are in constant and regular use in practically every home in this country, and there is no evidence that they have yet reached the peak of their popularity.

THEIR EFFECT ON THE SKIN

Thomas Hedley & Co. Limited, makers of Tide and other detergents, constantly test their washing products to determine their effect on the skin of housewives. In addition to every kind of accepted laboratory technique, such as patch and immersion tests, Hedley have conducted, under careful medical supervision, prolonged home usage tests. These were developed to obtain a reliable measure of the mildness of washing products under normal usage conditions in the home.

Observations on over 12,000 housewives have shown that household detergents as a class do not differ in their effect on the skin from all-purpose soap powders which have been used for years.

Specifically, research has shown that Tide, the most popular of the new detergents, is as mild as other general-purpose soap powders.

Moreover, the results of the Hedley investigations disclosed that a washing product plays a much smaller part in determining the skin condition of the average housewife than does, for example, the coldness of the weather and the extent to which she uses hand cream.

The conclusions from these tests are fully in line with the Report of the Government Committee on Synthetic Detergents, 1956, which stated **"We have found . . . that the incidence of skin trouble attributable to synthetic detergents is no higher than that previously due to the use of soap products, alkalis and allied preparations."**

FOR FURTHER INFORMATION . . .

write to Thomas Hedley & Co. Limited, Gosforth, Newcastle upon Tyne 3, for the booklet, "A study of the effect of the New Detergents on the Skin."

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FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Piombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

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Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

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The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The next EXAMINATION for the MEMBERSHIP will commence on MONDAY, 31ST DECEMBER, 1956.

Prospective candidates are asked to note that entries accompanied by the certificates, testimonials, and the examination fee of 15 guineas as required by the by-laws, must reach the College not later than first post on Monday, 3rd December, 1956. Candidates must have been qualified for 18 months.

Candidates who propose to submit published work under the regulations are required to give 28 days notice, and should apply in writing to the Registrar, without delay, for detailed instructions as to the procedure they should follow. Completed entries for published work must also reach the College not later than first post on Monday, 3rd December, 1956.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

UNIVERSITY OF OXFORD

BETTY BROOKES RESEARCH FELLOW

Provided that a suitable candidate presents himself, the Board of the Faculty of Medicine intends to appoint a Betty Brookes Research Fellow. The Fellow will be expected to devote himself to a study of brain metabolism in relation to nervous and mental diseases. He will work mainly in the Department of Biochemistry, but will also have access to Clinical Departments, in particular those of Neurology, and Neurosurgery. He may undertake such teaching as may be prescribed by the Whitley Professor of Biochemistry. The Fellowship is tenable for 3 years in the first instance, but a Fellow is re-eligible. It is not essential that a candidate should have a medical qualification. The stipend will be fixed by the Board of the Faculty of Medicine at some figure not more than £1200 p.a. and the Fellow will be required to become a member of the F.S.S.U.

Applications should be sent to the Whitley Professor of Biochemistry, South Parks-road, Oxford, not later than 30th November, 1956.

UNIVERSITY COLLEGE LONDON

FREE PUBLIC LECTURES, AUTUMN TERM, 1956

THURSDAYS, 15TH, 22ND NOVEMBER, at 5 P.M., Dr. DOROTHY NEEDHAM, "The Biochemistry of Muscular Action."

THURSDAY, 29TH NOVEMBER, at 5 P.M., Prof. G. F. MARRIAN, "Some Recent Progress in the Biochemistry of the Œstrogenic Hormones."

Complete list of public lectures (including lunch-hour lectures) from Publications Officer, University College, Gower-street, W.C.1. (Stamped envelope required.)

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

(TECHNICAL OPTICS DEPARTMENT)

A COURSE OF 8 LECTURES on MICROSCOPY will be given on TUESDAYS and THURSDAYS at 4 P.M., commencing TUESDAY, 29TH JANUARY, 1957.

A COURSE of practical work will also be given from 25TH FEBRUARY to 22ND MARCH, 1957. This will consist of 8 periods of 3 hours each.

Application for admission should be made to the Registrar of the Imperial College, Prince Consort-road, London, S.W.7.

The fee is 2 guineas for the lectures, and 4 guineas for the practical work.

THE FACULTY OF RADIOLOGISTS

The CROOKSHANK LECTURE will be delivered by Sir JOHN CHARLES, K.C.B., F.R.C.P., at the Royal College of Surgeons, Lincoln's Inn-fields, London, W.C.2, on FRIDAY, 16TH NOVEMBER, 1956, at 5 P.M.

Subject: "The contribution of radiology in preventive medicine."

The Lecture is open to all members of the medical profession.

CONTRACEPTIVE TECHNIQUE

LECTURE FILM DEMONSTRATION for FINAL YEAR MEDICAL STUDENTS from London Medical Schools in No. 1 Lecture Theatre, U.C.H. Medical School, FRIDAY, 9TH NOVEMBER, 1956, at 5.30 P.M. Chairman: Prof. W. C. W. NIXON, F.R.C.S., F.R.C.O.G. Speaker: Mrs. SYLVIA DAWKINS, M.B., B.S.

Admission free. No tickets required.

BRITISH POSTGRADUATE MEDICAL FEDERATION

UNIVERSITY OF LONDON

POSTGRADUATE TRAVELLING FELLOWSHIPS

The Governing Body of the British Postgraduate Medical Federation invites applications from registered medical or dental practitioners for a limited number of Postgraduate Travelling Fellowships. The aim of the Fellowships is to enable graduates who are in the course of training as specialists in 1 of the pre-clinical or clinical branches of medicine, surgery, or dentistry, to obtain experience of the methods of practice, education, and research at Universities or other centres in the United Kingdom and abroad. Candidates must be British subjects who are holding an appointment or are engaged in postgraduate study at 1 of the undergraduate or postgraduate teaching hospitals or medical or dental schools or postgraduate institutes of the University of London. The Fellowships will normally be tenable for 1 year, and the successful candidates will be expected to commence work in SEPTEMBER or OCTOBER, 1957. The value of the Fellowships is not less than £750 p.a. and, in addition, allowances are paid for study abroad, for dependents in the case of married Fellows, and for travelling.

Applications must be submitted before 8th December, 1956, and further information and application forms may be obtained from the Assistant Director, British Postgraduate Medical Federation, Central Office, 18, Guilford-street, London, W.C.1.

THE MIDDLESEX HOSPITAL MEDICAL SCHOOL

LEVERHULME RESEARCH SCHOLARSHIP IN CLINICAL MEDICINE

Applications are invited for a Leverhulme Research Scholarship, value £1000 p.a., plus superannuation. The Scholarship shall be for 1 year in the first instance. The scholar must satisfy the Middlesex Hospital Medical School that the major part of his time will be spent in research, but he may be allowed to hold other appointments. The work may be related to any branch of medicine, must be essentially clinical and will be carried out in the Institute of Clinical Research attached to the Middlesex Hospital Medical School.

Applications, with the names of 2 referees, and a summary of the proposed work, should reach the Secretary of the Institute of Clinical Research, The Middlesex Hospital Medical School, 40, Hanson-street, London, W.1, not later than 7th December.

GLASGOW ROYAL INFIRMARY

MCGHIE CANCER RESEARCH SCHOLARSHIP

Applications are invited from suitably qualified persons (not necessarily medical graduates) for the above scholarship which is now vacant. This appointment is a whole-time research appointment, and remuneration is at the rate of £800–£1000 p.a. according to age and experience.

Applications, with names of not more than 3 referees, should be forwarded to the Medical Superintendent, Royal Infirmary, 84, Castle-street, Glasgow, C.4, from whom further particulars may be obtained. In their applications, candidates must indicate the nature and scope of their proposed research.

NAPT

SYMPOSIUM ON CHRONIC BRONCHITIS FOR CHEST PHYSICIANS, WEDNESDAY, 12TH DECEMBER, 1956, 3.30–6.30 P.M. in B.M.A. House, W.C.1. Chairman: J. L. LIVINGSTONE, M.D., F.R.C.P. Introduction, NEVILLE C. OSWALD, T.D., F.R.C.P., and 9 other papers.

Admission by ticket.

Details from NAPT, Tavistock House North, London, W.C.1.

UNIVERSITY OF LONDON. The Senate invite applications for the CHAIR OF DENTAL PROSTHETICS tenable at the Royal Dental Hospital of London School of Dental Surgery (salary within the range £2350–£2850 a year).

Applications (10 copies), must be received not later than 10th December, 1956, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

UNIVERSITY OF BRISTOL. The University invites applications for the post of ASSISTANT MEDICAL OFFICER to undertake the routine examination of students and to assist in the treatment of students. Salary £950–£1100 p.a., according to qualifications and experience. Children's allowance scheme.

Applications, including the names of 3 referees, should reach the undersigned, from whom further particulars may be obtained, not later than 10th November, 1956.

H. C. BUTTERFIELD, Registrar and Secretary.

UNIVERSITY OF NATAL/NATAL PROVINCIAL ADMINISTRATION. FACULTY OF MEDICINE, UNIVERSITY OF NATAL, DURBAN, SOUTH AFRICA. Applications are invited from suitably qualified persons for appointment to the post of SENIOR LECTURER IN PÆDIATRICS on the Joint Medical Establishment of the University of Natal and the Natal Provincial Administration. The salary scale attached to the post is £1400–£50–£2000 p.a. In addition a temporary cost-of-living allowance of £234 p.a. will be paid to married men only.

Application form and further particulars of the post are obtainable from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. Applications close, in South Africa and London, on 15th December, 1956.

CANCER INSTITUTE BOARD, Melbourne, Victoria, AUSTRALIA. Applications are invited for the position of ASSISTANT MEDICAL DIRECTOR of the Institute. The appointee is required to possess a senior Degree or Diploma in Medicine or Surgery, and/or equivalent specialist qualification in radiotherapy.

In addition to clinical duties, the Assistant Medical Director is required to deputise for the Medical Director during his absence and to perform such administrative duties as are required by the Medical Director. The Assistant Medical Director is an ex officio member of the Board.

The full-time salary is at the rate of £A4016 7s. p.a., including £A356 4s. current cost-of-living adjustment.

Other conditions of this appointment cover:

(*a*) Rights to limited private practice under certain conditions.
(*b*) Superannuation benefits.
(*c*) Long Service Leave in addition to recreation and sick leave entitlements.

The position is non-resident. An appointee from overseas will be granted first-class fares for himself and family together with an allowance of £(sterling)200 for the transport of furniture and personal effects, and when, for exceptional reason, the cost of transport of goods exceeds the usual allowance, the Board will consider a request for a supplementary allowance.

The Cancer Institute Board (Peter MacCallum Clinic) provides treatment for and conducts research into cancer and allied diseases. The Institute uses modern equipment for radiotherapy and has excellent facilities for research in the clinical sphere, medical physics, and pathology. The outpatient attendances are 18,500 annually and inpatient treatment is conducted.

Further information about the Institute and terms of appointment may be obtained from the Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1, or the Agent-General for Victoria, Australia House.

Applications, accompanied by copies of testimonials and names of 4 referees, to reach the undersigned before 31st December, 1956.

A. F. CAMERON, Manager and Secretary.

WRIGHT-FLEMING INSTITUTE, ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2. Applications are invited for the post of ASSISTANT PRINCIPAL in The Wright-Fleming Institute of Microbiology, St. Mary's Hospital Medical School. The salary will be in the range of £2500–£2750 with children's allowance and superannuation under the F.S.S.U. Applicants must have experience in microbiology and immunology, and will be required to assist the Principal in administrative work and in the supervision of research activities.

Applications (6 copies), with the names of 3 referees, should be sent not later than Friday, 30th November, 1956, to the Secretary from whom further particulars may be obtained.

AUSTRALIA. UNIVERSITY OF SYDNEY. The Senate will shortly proceed to an appointment to the BOSCH CHAIR OF HISTOLOGY AND EMBRYOLOGY. The salary of the appointee will be £A3000 p.a., plus cost-of-living adjustment (£52 men, £39 women). There is retirement provision under the Professorial Superannuation Scheme, and in addition, a pension of not less than £A400 p.a. upon retirement after the age of 60 years. Finance is available for home purchase to male members of staff, who are married. The Senate reserves the right to fill the Chair by invitation.

A statement of conditions of appointment and information for candidates may be obtained on application to the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. Applications close, in Australia and London, on 26th November, 1956.

QUEEN'S UNIVERSITY, Kingston, Ontario. Applications are invited for the CHAIR OF ANATOMY, commencing September, 1957. Salary range $7000–$9500, depending upon qualifications and experience.

Address applications to Dean of Medicine, Queen's University, Kingston, Ontario, Canada.

Hospital Services : Senior Appointments

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Part-time CONSULTANT OPHTHALMIC SURGEON for 7 sessions a week to Regional Ophthalmic Centre to be set up at Oldchurch Hospital, Romford, to serve Romford, Walthamstow, Ilford, Barking, Tilbury and Brentwood districts. Residence in area served by the centre will be required.

Separate applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 17th November.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), St. Pancras School Treatment Centre, 25, Prince of Wales-road, N.W.5. Duties involve 2 visits a week (Monday and Wednesday afternoons), each 2½ hours clinical time, and candidates may apply for either or both of these sessions. Clinic may be visited by arrangement with the Divisional Medical Officer, 313–319, Harrow-road, W.9.

Applications before 3rd December, 1956.

(2) ASSISTANT PSYCHIATRIST (whole-time), Senior Hospital Medical Officer grade, Leavesden Hospital, Abbots Langley, Herts (2378 Beds—mental deficiency). Hospital may be visited by direct appointment.

Applications before 10th December, 1956.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited from Fellows of one of the Royal Colleges of Surgeons for the appointment of CONSULTANT E.N.T. SURGEON at the above Hospital as from 1st April, 1957. Candidates must be engaged in consulting practice and well established in their profession.

Applications, giving detailed information and the names and addresses of 3 referees, should reach the undersigned (from whom further information may be obtained) on or before 30th November, 1956.

R. E. LAWSON, Secretary and House Governor.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as CONSULTANT NEUROLOGIST (9 notional half-days a week), based on the Regional Neurological and Neurosurgical Units at the Brook Hospital, Shooters Hill-road, S.E.18, in the Woolwich Group of hospitals. Duties will include consultative clinics in neighbouring areas. Candidates must have had considerable experience in this special branch of medicine and possession of a Membership of a Royal College of Physicians is essential. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 17th November, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited from suitably qualified practitioners for the post of CLINICAL ASSISTANT in the Allergy Clinics (Wright-Fleming Institute of Microbiology) for 2 notional half-days per week; graded Senior Hospital Medical Officer. The appointment will be as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 21st November, 1956.

ST. THOMAS'S HOSPITAL, London, S.E.1. Assistant RADIOLOGIST (whole-time). Salary £1575–£2025 p.a.

Applications, naming 2 referees, to the Clerk of the Governors by 9th November, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) Part-time CONSULTANT E.N.T. SURGEON (9 notional half-days weekly). Duties in Wolverhampton Group hospitals (8 notional half-days) and at Guest Hospital, Dudley (1 notional half-day). Higher qualification/wide experience specialty essential. Must reside near Wolverhampton.

(*b*) 2 Whole-time ASSISTANT RADIOLOGISTS (£1575–£2025 p.a.) to Dudley Road Hospital (780 Beds). Diploma Diagnostic Radiology/wide experience specialty essential.

Applications (15 copies), stating name, age, nationality, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 19th November, 1956.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required experienced Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER for long period, full residence or only when on duty. Unit has 330 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery, chest clinic, and mass radiography.

Apply Physician-Superintendent.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT PSYCHIATRIST (whole-time), Little Plumstead (near Norwich) Mental Deficiency Group of hospitals. The group (1000 Beds) maintains a large outpatient service comprising general child psychiatry as well as mental deficiency. House or flat available. Salary scale £1575–£2025.

Applications (8 copies), stating age, experience, and the names of 3 referees, to Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 12th November, 1956. Candidates invited to visit hospitals by direct arrangement with the Medical Superintendents.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) required immediately for several weeks. Previous psychiatric experience essential. Salary according to national scale and at present 31½ guineas per week, less residential charges. Accommodation for single person only.

Apply Medical Superintendent.

LEEDS REGIONAL HOSPITAL BOARD.

Whole-time or maximum Part-time CONSULTANT GERIATRICIAN, Huddersfield Group of hospitals (482 Beds). The successful applicant will be in clinical charge of the geriatric service in the area and will be required to reside in Huddersfield.

Part-time CONSULTANT ANÆSTHETIST (8 sessions per week) at hospitals in the Huddersfield area. Person appointed to reside in Huddersfield.

Whole-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer scale) for duties at hospitals in the Scarborough, Bridlington, Malton and Whitby Group. Person appointed to reside in or near Scarborough.

Applications (12 copies), stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 24th November, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time Locum SENIOR HOSPITAL MEDICAL OFFICER in Geriatrics required for duties in the Bradford area. Appointment will be for 3 months in the first instance. A house is available, if required.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 2 referees, to the Secretary, Park-parade, Harrogate, as soon as possible.

NEW ZEALAND. MARLBOROUGH HOSPITAL BOARD. Applications are invited for position of Whole-time RADIOLOGIST (Junior or Senior Specialist) at Wairau Hospital, Blenheim, New Zealand (171 Beds). Reasonable travelling costs refunded.

Further details available from New Zealand House, London, W.C.2.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND. Applications are invited for the position of DIAGNOSTIC RADIOLOGIST, Otago Hospital Board. Applicants must hold a degree in medicine of an approved university and possess a higher qualification in the specialty. The salary payable will be that of a Junior or Senior Specialist under the Hospital Employment Regulations, viz.: £1600–£2300 p.a. The commencing salary will be determined in accordance with the qualifications and experience of the appointee. The position is a full-time and non-resident one. Travelling expenses as set out in the conditions of appointment will be paid when a contract of service is signed.

Conditions of appointment and application forms may be obtained from the Office of the High Commissioner for New Zealand, 415, Strand, London, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2. Applications, stating age, qualifications and experience, together with testimonials, Health and Radiological Certificates, will be received by the undersigned until 10 A.M. on Monday, 21st January, 1957.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.

P.O. Box 946, Dunedin, New Zealand.

NEW ZEALAND. COOK HOSPITAL BOARD, Gisborne, NEW ZEALAND. Applications, closing on Monday, 3rd December, 1956, are invited from registered medical practitioners for the appointment of PATHOLOGIST.

Salary in accordance with the Hospital Employment regulations salary rates for the following gradings :—

Senior Specialist : £2000–£2300.

Junior Specialist : £1600–£1900.

The amounts quoted are in New Zealand currency.

The position is non-resident but the Board will endeavour to make available temporary accommodation, Gisborne, with a population of 21,000, is situated on the sea coast and enjoys an ideal climate.

An information leaflet giving conditions of appointment may be obtained from The High Commissioner for New Zealand, 415, Strand, London, W.C.2. Completed applications to be sent by air-mail direct to Cook Hospital Board, Gisborne, N.Z.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Part-time (9 sessions) SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications, giving details of past experience and qualifications, together with the names of 3 referees, to be addressed to the undersigned as early as possible. (Special application forms can be obtained on request.)

F. J. CABLE, Secretary, United Manchester Hospitals.
The Lodge, Oxford-road, Manchester, 13.

TASMANIA. LAUNCESTON GENERAL HOSPITAL, LAUNCESTON. Applications, in duplicate, addressed to the Agent General for Tasmania, 457, Strand, London, W.C.2, and closing on 10th November, 1956, are invited from medical practitioners registrable in Tasmania for appointment to the position of PSYCHIATRIST. The position is a full-time appointment at the Launceston General Hospital.

Qualifications: Preference will be given to the candidates in possession of 1 or more of the following higher qualifications—M.D., M.R.C.P., M.R.A.C.P., and/or D.P.M. Experience in psychiatry is essential.

Normal working hours from 9 A.M. to 5.30 P.M., Monday to Friday inclusive, with emergency calls as required. Limited consultative private practice outside these working hours is permitted.

Salary range: £A2500–£100–£3000.
Annual recreation leave: 28 days.
Superannuation benefits available.
An assisted passage can be arranged through the Agent General for Tasmania.
Accommodation: A house is available, if required, on a rental basis.
Further particulars available from the Agent General for Tasmania.

Hospital Services: Junior Appointments

ALL SAINTS' HOSPITAL, Austral-street, West-square, London, S.E.11. WESTMINSTER HOSPITAL TEACHING GROUP. Applications are invited for the post of SURGICAL REGISTRAR (urological) for 1 year in the first instance, from 1st January, 1957. The appointment is subject to the terms and conditions of service of hospital medical and dental staffs. The post is primarily for the Urological Department but some general surgery is also included; it offers time for postgraduate study and there is access to clinical medicine throughout the Group.

Applications (6 copies), and the names of 2 referees, should reach the Secretary at the above address not later than 15th November, 1956.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (Acute General—307 Beds.) HOUSE SURGEON required. Post vacant 4th November, 1956. Pre-registration. Recognised for the F.R.C.S.

Applications, stating qualifications, experience, and with copies of 2 testimonials, to the Hospital Secretary.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of RESIDENT MEDICAL OFFICER (Registrar grade). Candidates must have held a resident hospital appointment and not be under 25 years of age. Appointment is for 1 year in the first instance.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 14th November to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, London, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. DENTAL REGISTRAR required for whole-time duties at hospitals in the Central Middlesex Group. Salary £850 p.a. in first year, £965 p.a. in second year; subject to terms and conditions of service for hospital medical and dental staff. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 30th November, 1956.

CENTRAL MIDDLESEX HOSFITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in General Surgical and Urological Department. Pre-registration appointment from 11th December.

Applications, with copies of 2 testimonials, to Medical Director by 10th November.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) HOUSE SURGEON required for 6 months (General Surgery and Special Departments). Post vacant 1st December, 1956. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. HOUSE PHYSICIAN (pre-registration) required on 5th November.

Applications, stating age, nationality, qualifications and experience, with the names of 3 recent referees, should be sent to the Secretary at the above address as soon as possible.

DULWICH HOSPITAL (in association with King's College Hospital Medical School for teaching purposes), East Dulwich-grove, S.E.22. CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. Applications invited for appointment to the undermentioned posts:—

HOUSE OFFICER (general medical duties)—3 positions.
HOUSE OFFICER (general surgical duties)—2 positions.
Recognised for pre-registration purposes. Vacant on 1st January, 1957.

Apply, giving age, details of qualifications and previous post (if any), with copy testimonials or names of 2 referees, to the Group Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, not later than 17th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of FIRST HOUSE PHYSICIAN for medicine and pædiatrics, to become vacant 1st January, 1957. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st January, 1957. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent test monials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE SURGEON. Appointment for 6 months from 1st January, 1957. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th November, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of RESIDENT GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR (recognised for the M.R.C.O.G. in gynæcology). Duties at this Hospital and the Garrett Anderson Maternity Home. Appointment for 1 year in the first instance, to commence 1st December, 1956. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, as soon as possible.

GROUP PATHOLOGICAL LABORATORY, ST. MARY ABBOTS HOSPITAL, Kensington, W.8., FULHAM AND KENSINGTON AND CHELSEA GROUP HOSPITAL MANAGEMENT COMMITTEES. Applications are invited for appointment at above Laboratory as SENIOR REGISTRAR (pathology). Post vacant January, 1957. Candidates will be required to work at Group Laboratory and as required at any of the Hospitals in either of the 2 groups. Candidates may visit the Laboratory by arrangement with the Director of Pathology.

Applications (5 copies) to be submitted by 16th November, 1956, on forms obtainable from, and returnable to, Group Secretary (L.144), Fulham and Kensington Hospital Management Committee, 5, Collingham-gardens, London, S.W.5.

GUY'S HOSPITAL, S.E.1. Applications are invited for the post of REGISTRAR (middle grade) in Diagnostic Radiology at Guy's Hospital. The appointment will be until 30th September, 1957, in the first instance, commencing as soon as possible, and applicants should hold a Diploma in Radiology.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 16th November, 1956.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 12-month resident appointment of SENIOR CASUALTY OFFICER (Senior House Officer grade), vacant 6th December should reach secretary, above address, by 17th November, quoting HH/SCO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months resident appointment of registered HOUSE PHYSICIAN should reach the Secretary, above address, by 9th November, quoting HH/HP.

LANGTHORNE HOSPITAL, E.11. Leytonstone (No. 10) HOSPITAL GROUP. Applications are invited for the post of HOUSE OFFICER in the Group Geriatric Unit at above Hospital. The post offers excellent scope for persons interested in this specialty as the most modern methods of geriatric treatment are employed, supervised by a Consultant Geriatrician, with full consultant services in other branches.

Application forms from the Senior Medical Officer, Langthorne Hospital, London, E.11, to be returned by 12th November, 1956.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR in General Medicine becoming vacant on 1st January, 1957. A higher qualification, although desirable, is not essential.

Applications (12 copies), giving full particulars and the names of 3 referees, should be received by the undersigned by 14th November, 1956. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the posts of 2 Part-time REGISTRARS to the Aural Department. A higher qualification, although desirable, is not essential. Each successful candidate will be required to attend on 4 half-days weekly.

Applications (12 copies), giving full particulars and the names and addresses of 3 referees, should be received by the undersigned by 14th November, 1956.

H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of RESEARCH ASSISTANT in Neurosurgery. Candidates must have had training in neurosurgery. The salary will be approximate to that of Senior Registrar according to experience.

Applications (12 copies), giving details of academic career and the names and addresses of 3 referees, should be received by the undersigned by 20th November, 1956.

H. BRIERLEY, House Governor.

HAMMERSMITH, WEST LONDON AND ST. MARK'S HOSPITALS. BOARD OF GOVERNORS, Ducane-road, London, W.12. Applications invited from registered medical practitioners for the following posts :—

Hammersmith Hospital and Postgraduate Medical School, Ducane-road, London, W.12

Whole-time NON-RESIDENT REGISTRAR (radiotherapy), 1st January.

Whole-time RESIDENT REGISTRAR (thoracic surgery), 1st January.

8 HOUSE PHYSICIANS (general medicine), 4 1st January, 4 1st February.

HOUSE PHYSICIAN, 1st January for duties in tuberculosis wards and chest clinic, dealing with all types of respiratory cases.

2 HOUSE SURGEONS (radiotherapy), 1 1st January, 1 29th January. These posts offer opportunities for attending general surgical postgraduate teaching.

HOUSE PHYSICIAN (paediatrics), 1st January. Post recognised for D.C.H.

HOUSE SURGEON (orthopaedics), 1st January.

Hammersmith Hospital and Institute of Obstetrics and Gynæcology, Ducane-road, London, W.12

2 HOUSE OFFICERS (obstetrics), 1 1st January, 1 1st February.

HOUSE OFFICER (gynæcology), 1st January.

These 3 posts recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials (names of 2 referees for Registrar posts), to Secretary, Board of Governors, by 12th November.

MILE END HOSPITAL, Bancroft-road, London, E.1. (484 Beds. Obstetric beds 69 : Gynæcological beds 31.) Applications are invited for the following posts :—

SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant on 31st December, 1956.

HOUSE SURGEONS (post-registration), obstetrics and gynæcology. Vacancies on 7th December, 1956, and 15th February, 1957.

The above posts are recognised for the M.R.C.O.G.

Application forms, obtainable from Physician-Superintendent, to be returned by 16th November, 1956, with copies of not more than 3 testimonials.

NATIONAL HEART HOSPITAL, Westmoreland-street, W.1 (with which is associated the Institute of Cardiology). The Board of Governors invites applications to fill a vacancy in the post of REGISTRAR. Applicants should have been fully trained in general medicine and should possess a higher medical qualification. Opportunities for research available.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 17th November, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 9th November, 1956.

H. EWART MITCHELL,
Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

POPLAR HOSPITAL, East India Dock-road, E.14. SENIOR HOUSE OFFICER required at above Hospital. Duties are mainly in connection with the Receiving-room and Casualty Departments. Preference will be given to a candidate who is preparing for a higher qualification. Post vacant 1st December, 1956.

Applications to the Group Secretary, Bow Group Hospital Management Committee, 2A, Bow-road, E.3.

PADDINGTON AND KENSINGTON CHEST CLINIC, 14/18, Newton-road, W.2. Applications are invited for the post of Whole-time REGISTRAR (non-resident). Duties include work at the Chest Clinic and St. Charles' Hospital, Ladbroke-grove, W.10. A good general medical background with some specialised knowledge in the diagnosis and treatment of diseases of the chest is desirable. Clinic and Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 19th November, 1956.

PUTNEY HOSPITAL, Lower Common, S.W.15. House PHYSICIAN (resident). Male or Female, vacant 4th December, 1956. Open to pre-registration candidates.

Apply Hospital Secretary not later than 14th November, 1956, enclosing copies of 3 recent testimonials.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE SURGEON (pre-registration) for 6 months commencing 15th December, 1956. Post recognised for F.R.C.S.

Applications, with 2 recent testimonials, to Hospital Secretary by 17th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Men and Women medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER in Pathology for work at the Royal Free Hospital and within the Group. Previous experience in a pathology appointment is desirable. The appointment is for 6 months in the first instance, subject to reappointment for a further 6 months ; duties to commence 1st January, 1957. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 20th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the following MEDICAL REGISTRAR posts in the Royal Free Hospital Group :—

(*a*) General Medicine, Gray's Inn-road.
(*b*) General Medicine, Lawn-road.
(*c*) General Medicine, at Lawn-road and Gray's Inn-road, including part-time duties in the Diabetic Department.

The above appointments are for 1 year in the first instance, duties to commence 1st January, 1957. Salary and conditions of service in accordance with the scales laid down by the Ministry of Health for Registrars.

Formal applications, giving details of qualifications and experience together with the names of 3 referees, should be made to the Secretary to the Board of Governors, Royal Free Hospital, Gray s Inn-road, W.C.1, not later than 25th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the appointment of REGISTRAR (Women) to the Gynæcological and Obstetric Department of the Elizabeth Garrett Anderson Hospital, with some duties at the Hampstead General Hospital. Applicants must be registered medical practitioners of not more than 10 years qualification. The appointment is full-time, resident, for 1 year in the first instance, duties to commence 1st December, 1956. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health.

Applications, with details of qualifications and experience, and giving the names of 3 referees, to be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, not later than 17th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SURGICAL REGISTRAR at the Royal Free Hospital, Gray's Inn-road. The appointment is for 1 year in the first instance, duties to commence on 1st January, 1957. Candidates should be registered medical practitioners of not more than 10 years standing and Fellows of the Royal College of Surgeons. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for Registrars.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 25th November, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of RESIDENT PATHOLOGIST (House Officer), vacant 1st December, 1956, from registered Men and Women practitioners. The post is for 6 months, renewable for a further 6 months. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 10th November, 1956.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in General Medicine to the Departments of Physical Medicine, Rheumatology and Psychiatry at the Royal Free Hospital. The appointment is full-time, non-resident, for 6 months in the first instance. Duties to commence 1st January, 1957. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 30th November, 1956.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR CASUALTY OFFICER at the Royal Free Hospital, Gray's Inn-road, W.C.1. The appointment is full-time, resident, for 6 months ; duties to commence 1st January, 1957. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 20th November, 1956.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (E.N.T. Department of the Royal Free Hospital). The appointment is full-time, non-resident, for 6 months, with possibility of reappointment. Salary and conditions of service in accordance with the scale laid down by the Ministry of Health for Senior House Officers. Duties to commence 1st December, 1956.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 10th November, 1956.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited for 2 full-time appointments of REGISTRAR in the Radiotherapy Department. 1 shortly vacant and 1 becoming vacant in March, 1957. Salary £850 p.a. Candidates must hold a Diploma in Medical Radiology.

Forms of application are obtainable from the House Governor, to whom applications, together with the names of 3 referees, should be sent by 17th November, 1956.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Senior House Officer) to commence duty on 9th January, 1957. The appointment is for a period of 12 months. Preference will be given to Fellows of the Royal College of Surgeons.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent not later than 13th November, 1956.

SOUTH WESTERN HOSPITAL, Landor-road, S.W.9. HOUSE PHYSICIAN (registered or pre-registration) required at the above Hospital. Combined T.B. and acute Medicine. Post vacant 8th December, 1956.

Form of application from the Secretary.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of ORTHOPÆDIC REGISTRAR (full-time) non-resident. Preference will be given to candidates with a higher surgical qualification. Duties to commence on 26th January, 1957.

Applications to be received not later than 23rd November, 1956. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the whole-time post of SENIOR REGISTRAR to the Department of Radiology. This post is non-resident and the holder will work mainly in the Neuro-radiological Department of St. George's Hospital (Atkinson Morley Hospital Branch). The successful candidate will be required to take up duty as soon as possible.

Applications, stating age, education, qualifications, and experience together with the names of 2 referees, should reach the undersigned not later than 24th November, 1956.

P. H. CONSTABLE, House Governor.

St. George's Hospital.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of HOUSE PHYSICIAN, in the grade of Senior House Officer, at the Atkinson Morley Hospital. The appointment will be as House Officer to the Neurological Unit, but will include the care of recovery beds and the care of certain staff. The successful candidate will be required to take up duty on 1st January, 1957. The appointment will be for 1 year.

Applications, stating age, education, qualifications experience and the names of 2 referees, should reach the undersigned not later than 17th November, 1956.

P. H. CONSTABLE, House Governor.

St. George's Hospital.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the post of Whole-time REGISTRAR in the Department of Pathology. The person appointed will have special facilities to study histopathology of the skin. Previous experience in pathology desirable but not essential.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to the Secretary to the Board of Governors by 17th November, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2. Applications are invited from suitably qualified practitioners for the post of NON-RESIDENT CASUALTY SURGEON. Candidates must have held an appointment as House Surgeon at this Hospital or at another Hospital approved by the Board of Governors. The appointment is for a first period of 6 months, with effect from 1st January, 1957; remuneration to be at Senior House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 21st November, 1956.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior HOUSE OFFICER (Casualty, Orthopædic and Fracture Departments), vacant now. Recognised for F.R.C.S. 6 months appointment and may then be renewed. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. South WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (whole-time), non-resident. Vacancy 1st January, 1957. Post recognised for F.R.C.S.

Application forms from Group Secretary, St. Luke's Hospital, Sydney-street, London, S.W.3 (within 14 days). Please enclose foolscap stamp d addressed envelope.

ST. TERESA'S MATERNITY HOSPITAL, The Downs, Wimbledon, S.W.20. (58 Beds.) Applications are invited for the appointment of RESIDENT OBSTETRIC HOUSE OFFICER for 6 months in the first instance, commencing on 8th December. Salary £425–£745, according to experience. Emoluments deducted according to usual scale. Self-contained flat available in the Hospital grounds. This post is ideal for those studying for higher degrees.

Applications, stating age, qualifications, nationality and experience, to the Medical Secretary.

ST. THOMAS'S HOSPITAL, S.E.1, AND THE SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. (Joint appointment.) Whole-time SENIOR MEDICAL REGISTRAR (2 vacancies) at St. Thomas's Hospital and the Southampton Group of hospitals. Subject to annual reappointment, the successful candidates will work for approximately equal periods at each of these centres. 1 post is vacant now and the other will become vacant on 15th February, 1957.

Applications (5 copies), including names and addresses of 2 referees, to the Clerk of the Governors, St. Thomas's Hospital, S.E.1, by 16th November, 1956.

ST. THOMAS'S HOSPITAL, London, S.E.1. Senior REGISTRAR to the Department of Anæsthetics. Whole-time, for a period of 1 year in the first instance.

Applications, naming 2 referees, to the Clerk of the Governors by 10th November, 1956.

ST. PETER'S, ST. PAUL'S, AND ST. PHILIP'S HOS-PITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade) required for St. Paul's Hospital on 1st December, 1956. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), and the names of 3 referees, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 10th November, 1956.

ST. GILES' HOSPITAL, St. Giles'-road, Camberwell, S.E.5. CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. Applications invited for appointment to undermentioned posts:—

HOUSE OFFICER (general medical duties).
HOUSE OFFICER (general surgical duties).
HOUSE OFFICER (orthopædic duties).

Recognised pre-registration posts. Vacant on 1st January, 1957.

Apply, giving age and details of qualifications and previous post (if any), with copy testimonials or names of 2 referees, to the Group Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, not later than 17th November, 1956.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of MEDICAL REGISTRAR for 1 year in the first instance from 1st January, 1957, or as soon as possible thereafter. This post will include a period of duty at the Whittington Hospital, London, N.19. Preference will be given to candidates holding higher qualifications.

Applications, with names of 2 referees, to Administrator and Secretary by 17th November, 1956.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY, 91, Dean-street, W.1. Applications are invited for the full-time non-resident post of REGISTRAR in Neurology. Post tenable for 1 year in first instance and renewable subject to review. Duties include assisting the Physicians in both the inpatient and outpatient departments, acting as senior member of the junior medical staff, and supervising the House Physicians (Senior House Officers).

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 19th November, 1956.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the appointment of REGISTRAR in General Medicine at the Aberdeen Royal Infirmary and Woodend General Hospital. Conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON (Male) for Traumatic and Orthopædic Unit. 6 months appointment suitable for pre-registration candidates.

Applications, stating age, qualifications and experience with copies of up to 3 recent testimonials, to Medical Director of Hospital immed ately.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDE-VILLE HOSPITAL. HOUSE SURGEON for Gynæcology Department. Post recognised for M.R.C.O.G. Vacant 18th November, 1956.

Applications from registered practitioners, with 2 testimonials, to the Administrative Officer as soon as possible.

BARNSTAPLE. NORTH DEVON INFIRMARY. (Central Group Hospital of 105 Beds.) SENIOR HOUSE SURGEON post vacant from 1st January, 1957, for 1 year. Salary £745 p.a. (5-roomed furnished flat available for rental.)

Applications, with customary details, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BARROW AND FURNESS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident or non-resident post of REGISTRAR in Anæsthetics in the Barrow and Furness Group of hospitals, based at the North Lonsdale Hospital, Barrow-in-Furness. Hospital approved for D.A.

Applications, giving age, details of experience, and names of 3 referees, to Group Secretary, 105, Abbey-road, Barrow-in-Furness.

BEDFORD (near). BROMHAM HOSPITAL. (434 Beds for mental defectives and 60 at Annexe near Sandy.) REGISTRAR in Psychiatry required (resident). Hospital may be visited by direct appointment with the Medical Superintendent (phone: Oakley 295).

Application forms obtainable from, and returnable to, Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON (mainly orthopædic). Pre- or post-registration; recognised for F.R.C.S. Required immediately. Post offers exceptional opportunities for general experience in busy acute surgical units.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) 2 Resi-dent Pre-registration HOUSE PHYSICIANS required, 1 mid-November and 1 end November.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (439 Beds.) House SURGEON required. Pre- or post-registration. Recognised for F.R.C.S. Post offers exceptional opportunities for general experience in busy acute Surgical Unit.

Inquiries and applications, with copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BIDEFORD AND DISTRICT HOSPITAL. (51 Beds.) Applications invited for post of HOUSE OFFICER, vacant mid-November. Flat available for married officer.

Applications, stating names of 2 referees, to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple, by 14th November, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) Whole-time SENIOR REGISTRAR in Psychiatry, All Saints Hospital, Birmingham (1385 Beds) and Early Treatment Centre, Uffculme. Candidates should be actively interested in research. D.P.M. essential. Higher medical qualifications an advantage.

(*b*) Whole-time SENIOR REGISTRAR in Psychiatry, Shelton Hospital, Shrewsbury (972 Beds). Wide experience specialty and higher qualification required. Resident.

(*c*) Whole-time SENIOR REGISTRAR in Radiology, Selly Oak Hospital, Birmingham (1059 Beds). Diploma in Diagnostic Radiology essential. Department serves large General Hospital and group of subsidiaries (including Children's, Maternity, Eye and E.N.T.) and provides experience throughout whole range of specialty. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals under the interchange scheme for Senior Registrars agreed between the 2 Boards.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned by 19th November, 1956.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Coventry No. 20 Group, Coventry and Warwickshire Hospital, Coventry**

REGISTRAR (physical medicine), non-resident. Duties with Coventry Group of hospitals and Warneford Hospital, Leamington Spa.

(2) **Birmingham (Dudley Road) Group, Dudley-road, Birmingham, 19**

RESIDENT SURGICAL REGISTRAR. Duties at St. Chad's Hospital (50 general surgical beds). Recognised for F.R.C.S. Higher qualification an advantage. Married accommodation.

(3) **Stoke-on-Trent Group, Princes-road, Stoke-on-Trent**

(*a*) MEDICAL REGISTRAR (chest diseases). Duties mainly at Cheshire Joint Sanatorium (305 Beds) with periods of transfer to Tuberculosis Unit (pregnancy and diabetic) at City General Hospital and Stoke-on-Trent Chest Clinic. The post offers wide experience in the investigation and medical and surgical treatment of tuberculosis and other chest diseases. Possible married accommodation available later.

(*b*) REGISTRAR (E.N.T. Surgery) for North Staffordshire Royal Infirmary. Experience specialty essential. Resident or non-resident. Post vacant 1st December.

Application forms from Group Secretaries, to be returned by 12th November, 1956.

BIRMINGHAM, 15. ROYAL ORTHOPÆDIC HOSPITAL. (Recognised by Royal College of Surgeons. 336 Beds for long and short term orthopædic cases (non-traumatic) and extensive outpatient services.) SENIOR HOUSE OFFICER (registered medical practitioner preferably with orthopædic experience).

Applications, with testimonials or names of referees, to Administrator.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS, THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of RESIDENT MEDICAL OFFICER (second of 2) Senior House Officer grade, vacant 1st January, 1957, for 1 year. Main duty to take charge of Infants Block (66 Cots). Valuable opportunity for further study of diseases of infancy, some previous experience of which is desirable. M.R.C.P. preferred.

Forms of application available from the House Governor and should be returned to him by 22nd November, 1956.

G. A. PHALP, Secretary to the Board of Governors.

BRAINTREE. BLACK NOTLEY HOSPITAL. (536 Beds.) Applications invited for post of SENIOR HOUSE OFFICER for Non-pulmonary Tuberculosis Unit of approximately 120 Beds, particularly for skeletal and renal tuberculosis. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required 11th December, 1956. Post is recognised for F.R.C.S. Junior Hospital Medical Officer post can be for any period up to 4 years and a starting salary above the minimum of the scale may be approved on account of special experience or qualifications.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer grade). Main duties at Bolton District General Hospital and Bolton Royal Infirmary. Vacant 17th November, tenable for 12 months and recognised for the D.A. and F.F.A.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. BOLTON ROYAL INFIRMARY (237 Beds), BOLTON DISTRICT GENERAL HOSPITAL (604 Beds). RESIDENT SENIOR HOUSE OFFICERS in Medicine (2), 1 for each of the above Hospitals. Vacant mid-November (Royal Infirmary) and mid-December (General Hospital) and tenable for 12 months.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON. The appointment, which becomes vacant on 28th November, 1956, is recognised for the F.R.C.S. examination and for pre-registration purposes, and favourable consideration will be given to suitable applicants for subsequent House Physician appointments.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (resident) orthopædic and casualty combined. The post, which becomes vacant on 10th November, is recognised for the F.R.C.S. examination.

Applications to the Hospital Secretary.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration post.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (orthopædics) to the Orthopædic Unit. Salary in accordance with national scale. Vacant 4th December, 1956. This post is recognised, as a pre-registration appointment.

Applications, stating age, qualifications, and experience together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) 2 HOUSE SURGEONS required immediately. Recognised for pre-registration and F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BURTON UPON TRENT GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (orthopædic) required at the above Hospital. Duties include supervision of Casualty House Officer. Married quarters available.

Applications to Group Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. FAIRFIELD GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcology and obstetrics).

Apply, stating age, qualifications and experience, together with names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

CARDIFF (near). CAERPHILLY DISTRICT MINERS HOSPITAL. (226 acute general beds.) HOUSE OFFICER in Obstetrics and Gynæcological Department at above Hospital, vacant shortly. Pre-registration recognition anticipated.

Applications, stating age, qualifications, &c., and names of 2 referees, to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glamorgan, by 13th November, 1956.

CARLUKE, LANARKSHIRE. LAW HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (tuberculosis) in Sanatorium Unit, Law Hospital. Preference will be given to Female candidates.

Applications, stating age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Group Medical Superintendent, Law Hospital, Carluke.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR RADIOLOGICAL REGISTRAR. Post vacant now. Candidates may visit Hospital by arrangement with the Director of Radiology (Tel. : Fairlands 4343—Ext. 37).

Forms of application, to be returned by 21st November, obtainable from the Group Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR HOUSE OFFICER (Chest Unit), medical and surgical duties, vacant 1st January, 1957.

Applications, stating age, qualifications and experience, with copies of testimonials and the names of 2 referees, should be sent to the Group Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR HOUSE OFFICER to the Obstetrics and Gynæcology Department (105 obstetric and 30 gynæcological beds). Post vacant end of December. Experience in obstetrics and gynæcology essential : post recognised for M.R.C.O.G. Appointment for 6 months, with possibility of renewal for further 6 months.

Applications, stating age, qualifications and experience, with copies of recent testimonials and the names of 2 referees, should be sent to Group Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. HOUSE SURGEON (pre-registration post), general surgery with duties in E.N.T., vacant 1st December, 1956.

Applications, giving age, qualifications, &c., with copies of recent testimonials and the name and address of 1 referee, should be sent to the Secretary at above address.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR HOUSE OFFICER (resident or non-resident) to Geriatric Unit of 50 beds, vacant end November. Duties include the clinical care of 20 male beds, general work in the Unit and domiciliary visiting (mileage allowance of own car used), with a Social Worker for assessment of priority for admission. An excellent training for general practice. Further information may be obtained from the Physician-Superintendent.

Applications, stating age, qualifications and experience with copies of recent testimonials and the names of 2 referees, should be sent to Group Secretary at above address.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 318 Beds.) Whole-time ANÆSTHETIC REGISTRAR. The Surgery practice of the Hospital includes emergency, orthopædic, E.N.T., and general surgery, and there is a special Surgical Unit in association with the Hospital for Sick Children, Great Ormond-street. The post is recognised by the Faculty of Anæsthetists. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications, on forms obtainable from the Group Secretary, should be submitted by 17th November, 1956.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications invited from pre-registration candidates, or others, for the post of HOUSE SURGEON. Recognised for F.R.C.S. Tenable for 6 months from 22nd November. The successful candidate will have the option of proceeding immediately to the post of House Physician for a further period of 6 months.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 3rd November, 1956. 100 orthopædic beds. Senior House Officer or House Officer (intern grade). Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

COLWYN BAY AND WEST DENBIGHSHIRE HOSPITAL, COLWYN BAY. CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Locum JUNIOR HOSPITAL MEDICAL OFFICER required immediately at the above Hospital for 2 or 3 weeks.

Applications to Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration) required from 20th November, 1956. Post recognised for F.R.C.S. examination.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (casualty), vacant 24th November, 1956. Recognised for F.R.C.S.

Apply, stating full details with copies of 2 recent testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (general surgery). Pre-registration candidates eligible. Vacant 19th November, 1956.

Apply, stating details with copies of 2 testimonials, to Secretary.

DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) which becomes vacant 27th December, 1956. The Hospital is recognised for the F.R.C.S. and the Surgical Unit comprises 52 Beds for general surgery.

Applications, giving full details, should be sent to the Administrative Officer at the Hospital.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Applications are invited for the post of HOUSE SURGEON (Senior House Officer). Post recognised for F.R.C.S.

Applications to the Group Secretary, Doncaster Hospital Management Committee, at Doncaster Royal Infirmary.

DOUGLAS, ISLE OF MAN. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited from registered medical practitioners with previous hospital experience, preferably at a teaching hospital, for the post of SENIOR HOUSE SURGEON at this busy General Hospital. The Senior of 4 House Officer posts. The post becomes vacant mid-November, and is suitable for candidate seeking further clinical experience and opportunity for reading for higher qualification. Recognised for F.R.C.S. Salary £745 p.a. with a deduction of £125 p.a. for board, lodging, &c., if resident.

Applications, giving relevant particulars, and copies of 2 recent testimonials, or names and addresses of 2 referees, should be forwarded to the Secretary, Noble's Isle of Man Hospital, Douglas.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Salary £745, less emoluments. Duties to include acute and chronic medicine.

Detailed applications, with references, to the Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches of tuberculosis within Group, including surgery, M.M.R., and clinics. Time for study. Ex-patients welcome. £150 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (anæsthetics). Post now vacant.

Apply, Group Secretary, Guest Hospital, Dudley.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Pathology (non-resident) required at above Hospital. Appointment for 1 year in first instance. Previous experience in pathology desirable. Hospital may be visited by direct arrangement with the Medical Director.

Application forms obtainable from, and returnable to, the Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 17th November, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (non-resident), required in the Casualty Department at above Hospital.

Apply, stating age, nationality, qualifications and experience, together with names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, by 10th November, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry, St. Andrew's Hospital, Thorpe, Norwich (1250 Beds). Full range of modern psychiatric treatments and a number of associated general hospital outpatient clinics. Married or single quarters available. Appointment for 1 year, renewable for second year.

Applications, stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 12th November, 1956. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. Appointment of RESIDENT HOUSE SURGEON (third post), vacant 30th December, 1956. Post provides experience and duties in both general surgery and orthopædics. 6 months appointment. Post recognised for F.R.C.S. by the Royal College of Surgeons.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee.

EPPING. ST. MARGARET'S HOSPITAL. Senior House OFFICER (orthopædics) for orthopædics and casualty. Recognised training post for F.R.C.S. Busy General Hospital with easy access to London. Salary on national scale, less deduction for board, lodging, &c.

Applications, with copies of 2 recent testimonials, to the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 9th November.

EPSOM, SURREY. ST. EBBA'S HOSPITAL. St. Ebba's AND BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR at above Hospital. The Hospital (765 Beds) is principally concerned with the treatment of voluntary cases of good prognosis and has over 1300 admissions annually. There are full facilities for psychological and physical investigations and all modern treatment methods are used. The Hospital has Outpatient Departments and a special unit for juvenile psychiatric cases. Tutorials are given by senior staff in preparation for the D.P.M. and every assistance is given to staff to attend London neurological clinics. Full residential amenities are available. Candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, St. Ebba's and Belmont Group Hospital Management Committee, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms should be returned to him within 2 weeks of the appearance of this advertisement.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from pre-registration and registered medical practitioners for the appointment of HOUSE PHYSICIAN (general medicine and pædiatrics) vacant 21st December, 1956.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 10th November, 1956.

GLASGOW, E.3. ROBROYSTON HOSPITAL. Applications are invited for the posts of :—

(*a*) JUNIOR HOSPITAL MEDICAL OFFICER ;

(*b*) Locum JUNIOR HOSPITAL MEDICAL OFFICER ;

at the above-named Hospital.

Salary and conditions according to national scale and posts are non-resident. The Hospital treats all forms of tuberculosis both medical and surgical. Thoracic and urogenital tuberculosis form a major part of the operative work.

Further particulars may be obtained from the Physician-Superintendent to whom application should be made as soon as possible.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Anæsthetics (2 vacancies). Duties at above Infirmary.

Write, giving 3 names for reference, not later than 8th November, 1956, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW VICTORIA HOSPITALS BOARD OF MANAGEMENT. RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Belleficld Sanatorium, Lanark.

Applications to the Secretary and Treasurer, Board of Management for Glasgow Victoria Hospitals, 24, St. Vincent-place, Glasgow, C.1.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (118 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. SECOND RESIDENT SURGICAL OFFICER with duties in orthopædics, gynæcology, E.N.T. and relief duties for Resident Surgical Officer required at Registrar rate of pay. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (233 Beds.) RESIDENT HOUSE PHYSICIAN required from 17th November. Post is tenable for 6 months and is recognised for pre-registration candidates.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

GUILDFORD. ST. LUKE'S HOSPITAL. Guildford GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SURGICAL REGISTRAR (resident preferred) in the General Surgical Unit (60 Beds including children) at the above Hospital. Preference will be given to candidates holding higher qualifications. The Hospital may be visited by arrangement with the Medical Superintendent.

Application forms from Group Secretary, Guildford Group Hospital Management Committee, St. Luke's Hospital, Guildford, to whom they should be returned not later than 17th November, 1956.

HAREFIELD HOSPITAL, Harefield, Middlesex. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) for duties on the Thoracic Surgical Unit.

Applications, together with copies of 2 testimonials, to be sent to the Medical Director, Harefield Hospital, Harefield, Middlesex, by 10th November, 1956.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE PHYSICIAN, vacant 2nd December, 1956.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) Applications are invited for the post of HOUSE SURGEON (general surgery) vacant early November.

Apply as soon as possible to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE PHYSICIAN (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 3rd December, 1956.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HITCHIN, HERTFORDSHIRE. NORTH HERTS HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 3rd December, 1956. Recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Resident ANÆSTHETIST (Senior House Officer) required 1st January, 1957. The post offers varied experience, and is recognised for the D.A. and F.F.A.R.C.S. examinations.

Applications, stating age, nationality, qualifications and experience, together with names of 2 referees, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE SURGEON to the Princess Royal Maternity Home (57 Beds), to commence duty on 21st November, 1956. The holder of the post, which is recognised for the D.Obst.R.C.O.G., will have access to the abnormal maternity and gynæcological beds at The Royal Infirmary. The Department is under the control of 2 Consultant Obstetricians and Gynæcologists. Salary in accordance with national scale.

Applications to be addressed to—

H. J. JOHNSON,
Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT JUNIOR HOUSE SURGEON. Recognised for the F.R.C.S. examinations. (Pre- or post-registration.) Busy acute general surgical unit.

Applications, with 2 recent testimonials, to the Hospital Secretary.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD. There will be vacancies for the following at above Hospital.

HOUSE SURGEON—1st December, 1956. First or second post pre-registration.

HOUSE SURGEON—21st December, 1956. Second post pre-registration.

The posts will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ILFORD, KING GEORGE HOSPITAL. There is a vacancy for a SENIOR HOUSE OFFICER ANÆSTHETIST at above Hospital. The Officer appointed will be required to be available for duty in other hospitals in the Group. Salary will be at the rate of £745 p.a., less £150 p.a. emoluments.

Applicants should have been registered not less than 1 year, and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Senior Consultant General Surgeon, vacant on 7th November, 1956. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

KETTERING GENERAL HOSPITAL, Kettering. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Pædiatrics, vacant now. Post recognised for D.C.H.

Applications, together with copies of 3 recent testimonials, should be sent to the Group Secretary as soon as possible.

LANCASTER. BEAUMONT HOSPITAL, Slyne-road. PÆDIATRIC REGISTRAR (resident). Previous pædiatric experience essential. Duties include experience in Children's Medical Ward, in Neonatal Unit, and Pædiatric outpatient clinics. Unit recognised for D.C.H. Candidates may visit Hospital by direct appointment.

Applications, together with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Halifax Group (approximately 290 Beds) in the surgical specialties. Resident.

Chest Diseases

Leeds Chest Clinic and additional duties, as required, at Regional sanatoria. Previous experience in diseases of the chest desirable. Accommodation for a single person only at Killingbeck Hospital.

General Medicine

(i) Pontefract and Castleford Groups (65 general medical beds). Married accommodation available.

(ii) Harrogate General Hospital (253 Beds) (56 general medical beds) and at Knaresborough Hospital. Also some duties in pædiatrics (28 Beds). Non-resident. Furnished flat may be available.

General Surgery

(i) St. Luke's Hospital, Bradford (160 general surgical beds). Recognised for the F.R.C.S.

(ii) Bradford Royal Infirmary. 1 of 2 similar posts (90 general surgical beds) may be non-resident. Recognised for F.R.C.S.

Obstetrics and Gynæcology

(i) York A Group (80 obstetric and 75 gynæcological beds). Recognised for M.R.C.O.G.

(ii) Dewsbury, Batley and Mirfield Group. Resident. (Aggregate of 100 obstetric and 22 gynæcological beds.) Recognised for D.Obst.R.C.O.G.

(iii) Duties alternating (6 month periods) between St. Mary's Hospital, Leeds (110 obstetric beds) and St. James's Hospital, Leeds (75 obstetric and 52 gynæcological beds). Recognised for M.R.C.O.G.

Orthopædic Surgery

St. James's Hospital, Leeds (64 orthopædic beds), and the Public Dispensary, Leeds. Non-resident.

Psychiatry

(i) Two similar posts—Clifton Hospital, York (1100 Beds). Resident or non-resident.

(ii) Storthes Hall Hospital, Kirkburton, near Huddersfield (2680 Beds), and associated clinics. Accommodation for single person. In addition unfurnished flat for married person.

Facilities for attendance at Leeds University will be provided for the successful candidates who are studying for the D.P.M.

Radiotherapy

Regional Radium Institute, Bradford (50 Beds). Preferably resident. Unit provides a complete radiotherapy service for approximately 1,000,000 population.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 8th November.

LEEDS REGIONAL HOSPITAL BOARD. Senior Registrar vacancies.

Chest Diseases

Castle Hill Sanatorium, Cottingham, near Hull (220 tuberculosis beds and 50 thoracic surgical beds). Non-resident.

Child Psychiatry

Person appointed will be under training at the Leeds University Department of Psychiatry and associated clinics and will have experience at the local authority Child Guidance Department and at a special school for maladjusted boys.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 15th November, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. Maternity HOSPITAL AT LEEDS. RESIDENT SURGICAL OFFICER of Registrar status required for 1 year in the first instance, from 1st January, 1957. Conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, before 12th November, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR for E.N.T. Department required, for 1 year in the first instance, from 1st January, 1957. Terms and conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, not later than 12th November, 1956.

LIVERPOOL. AINTREE HOSPITAL. Fazakerley Group OF HOSPITALS MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgical). Applications are invited from registered medical practitioners. The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed "Resident Senior House Officer," to be submitted immediately to the Physician-Superintendent.

LIVERPOOL. AINTREE HOSPITAL. Fazakerley Group OF HOSPITALS MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (medical). Applications are invited from registered medical practitioners. The Hospital is for the treatment of pulmonary and non-pulmonary tuberculosis, and is a main centre for thoracic surgery and has an Orthopædic Department. Salary will be in accordance with terms and conditions of service for hospital medical staff.

Applications, endorsed "Resident Senior House Medical Officer," to be submitted immediately to the Physician-Superintendent.

LOUTH COUNTY INFIRMARY. (215 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (orthopædics and casualty) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant mid-December, 1956. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MANCHESTER, 4. ANCOATS HOSPITAL. Applications are invited for the post of REGISTRAR in Medicine (Resident Medical Officer), vacant 2nd January, 1957.

Applications, with names of 2 referees, by 12th November, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester.

MANCHESTER, 8. CRUMPSALL HOSPITAL. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer) with duties in the Department of Orthopædic Surgery. Recognised for F.R.C.S. Vacant 19th November, 1956.

Applications, with names of 2 referees, by 12th November, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester.

MANCHESTER REGIONAL HOSPITAL BOARD. 2 posts of SENIOR REGISTRAR in Psychiatry as follows :—

(*a*) Salford Group of hospitals (Salford Royal and Hope Hospitals) and Springfield (Mental) Hospital, Manchester.

(*b*) Bury and Rossendale Group of hospitals.

The person appointed to the latter post may be required to transfer for a period of service to Prestwich Mental Hospital, near Manchester, or to another psychiatric team based on a general hospital centre elsewhere in the region where further experience and training can be obtained.

Application forms, obtainable from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, should be returned by 19th November, 1956.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of REGISTRAR at the above Hospital. Whole-time post (non-resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made as soon as possible on forms obtainable from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. ECCLES AND PATRICROFT HOSPITAL. (General Hospital—48 Beds.) 1 SENIOR HOUSE OFFICER required. The work of the Hospital is mainly surgical and there is a busy Outpatient Department. Post vacant early November.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.)

SENIOR HOUSE OFFICER (non-tuberculous thoracic surgery) required for Manchester Regional Hospital Board Centre. Post now vacant.

SENIOR HOUSE OFFICER (general medicine) required. Post vacant 1st January, 1957.

HOUSE PHYSICIAN (pædiatrics) required for mid-November. Post-registration. There is a Midwifery Unit of 73 Beds and a Pædiatric Unit which includes 10 thoracic surgical beds. Recognised for D.C.H.

Application forms from Group Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE OFFICER (obstetrics), vacant immediately, at the above Hospital.

Applications, with full details, to be submitted to the Administrative Officer within 7 days of the appearance of this advertisement.

MARKET DRAYTON (near), SHROPSHIRE. CHESHIRE JOINT SANATORIUM. (305 Beds.) RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer according to experience). The post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

NEWMARKET GENERAL HOSPITAL Suffolk. Applications are invited for the post, now vacant, of SENIOR HOUSE OFFICER, for orthopædic and casualty duties. The post is resident.

Applications, giving age, nationality and qualifications, together with 3 recent testimonials, should be sent to the Medical Superintendent.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. 2 JUNIOR HOSPITAL MEDICAL OFFICERS (1 medical, 1 surgical) required for the above Hospital, situated on the Great North-road, approximately 20 miles from Nottingham. Post offers good experience. The Consultant staff attending Newark Hospital are on one or more of the Nottingham Hospitals. During next few months 2 flats will be available as married quarters but in the meantime single accommodation can be provided. Salary £775–£50–£1075. Duties to commence mid-December.

Applications, giving names of 3 referees, should be sent as soon as possible to the Group Secretary, Nottingham No. 1 Hospital Management Committee, General Hospital, Nottingham.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Orthopædic Department.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Newcastle upon Tyne.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Cardiology. SENIOR HOUSE OFFICER (resident) required in the Cardiovascular Department, Regional Unit, vacant November.

Applications, together with the names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident (or non-resident) post of SENIOR HOUSE OFFICER (Casualty Department), tenable for 12 months, becomes vacant on 7th January, 1957. Recognised for F.R.C.S. Diploma.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. Applications are invited for the whole-time, non-resident post of SENIOR REGISTRAR in the Department of Radiotherapy. Candidates should hold a recognised Diploma in Radiotherapy or a higher qualification in medicine or surgery. The appointment will be for 1 year in the first instance and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving age, nationality, experience and qualifications, and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the date of appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time appointment of SENIOR MEDICAL REGISTRAR to act as Resident Medical Officer at the Royal Victoria Infirmary. Preference will be given to persons who have held the grade of Senior Registrar for 2 or more years. The appointment is for 1 year in the first instance and will be subject to terms and conditions of service of hospital medical staff in the National Health Service. A flat adjoining the Infirmary may be available for the successful candidate.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident appointment of SENIOR REGISTRAR in Radiology. Applicants should have spent at least 2 years as Registrar in Diagnostic Radiology and should be in possession of the D.M.R. (Diagnostic). The appointment will be for 1 year in the first instance and will be subject to terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident appointments of SENIOR REGISTRAR and REGISTRAR to the Department of Bacteriology at the Royal Victoria Infirmary. The successful candidates will assist in the general work of the laboratory, including blood transfusion serology and in the research programme. The appointments will be for 1 year in the first instance and will be subject to terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of SENIOR HOUSE OFFICER to the Department of Neurology and Neurosurgery at the Royal Victoria Infirmary. The appointment will be for 1 year and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time non-resident appointment of REGISTRAR in the Department of Radiology (Diagnostic). Candidates should preferably possess a recognised Diploma in Radiology or hold the M.R.C.P. or F.R.C.S. The appointment is for 1 year in the first instance tenable at the Royal Victoria Infirmary and if an extension of 1 year is granted the appointee may be seconded for special experience to a hospital under the Newcastle Regional Hospital Board. The appointment will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.

Royal Victoria Infirmary, Newcastle upon Tyne.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and urology, vacant 1st December, 1956. Recognised for the Final F.R.C.S. in general surgery, and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 16th November, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department, vacant 1st December, 1956. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 16th November, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON (Senior House Officer) to the Casualty Department, vacant 1st December, 1956.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, by 16th November, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Anæsthetic REGISTRAR to the Swindon Group of hospitals. Duties will be mainly at the Victoria Hospital (96 Beds). The post is recognised for the D.A., and F.F.A.R.C.S., and provides good experience. Residential accommodation for a single person is available.

Applications on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 20th November, 1956.

OXFORD REGIONAL HOSPITAL BOARD. National SPINAL INJURIES CENTRE, STOKE MANDEVILLE HOSPITAL, AYLESBURY. Applications are invited for the post of REGISTRAR at this Centre. Experience in general surgery and medicine necessary. The post offers good experience in neurology, urology, physical medicine and rehabilitation. Full details of duties, &c., can be obtained from the Administrative Officer, Stoke Mandeville Hospital.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 16th November, 1956.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for a combined Hospital (Senior House Officer) and General Practice (Trainee) post in the Perth Area. The post is tenable for a period of 2 years from 1st February, 1957, each year to consist of 1 period of 6 months as a Senior House Surgeon in the Orthopædic Unit at Bridge of Earn Hospital and 1 period of 6 months as a Trainee General Practitioner in either Perth or Dunkeld. The Hospital post is recognised by the Royal College of Surgeons as a qualifying post for the purpose of the F.R.C.S. Salary at the rate of £745 p.a. during the first year and £775 p.a. during the second year will be paid by the Board of Management for the County and City of Perth General Hospitals.

All applications, giving age, qualifications and experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth, before 14th November, 1956.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for a combined Hospital (Senior House Officer) and General Practice (Trainee) post in the Perth Area. The post is tenable for a period of 2 years from 1st February, 1957, each year to consist of 1 period of 6 months as a Senior House Officer in the Anæsthetic Department at Perth Royal Infirmary or Bridge of Earn Hospital, and 1 period of 6 months as a Trainee General Practitioner in either Perth or Dunkeld. The Hospital post is recognised as a qualifying post for the purpose of the D.A. and F.F.A.R.C.S. Salary at the rate of £745 p.a. during the first year and £775 p.a. during the second year will be paid by the Board of Management for the County and City of Perth General Hospitals.

All applications, giving age, qualifications, experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth, before 14th November, 1956.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital (87 surgical beds)

HOUSE SURGEON (pre-registration post), vacant 20th November, 1956.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

St. Mary's Hospital, Milton-road, Portsmouth.

PONTEFRACT GENERAL INFIRMARY. Resident CASUALTY OFFICER required. Graded Senior House Officer. Recognised for Fellowship. Married accommodation available.

Applications to the Secretary, Great Northern House, Salter-row, Pontefract, Yorkshire.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. CENTRAL CASUALTY DEPARTMENT. SENIOR HOUSE OFFICER in Casualty, vacant 1st January, 1957. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Surgery, vacant November, 1956. Recognised for the F.R.C.S. Devonport Section.

HOUSE SURGEON (pre-registration post), vacant 1st January, 1957. Recognised for the F.R.C.S. Freedom Fields Section.

HOUSE SURGEONS (pre-registration posts), vacancies 1st December, 1956, 10th and 18th January, 1957. Recognised for the F.R.C.S. Greenbank Road Section.

Applications, stating age, nationality, qualifications and experience, together with the names and addresses of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER from Male registered medical practitioners who have preferably been qualified for 1 year, and have had previous hospital experience. The applicant should be able to drive a car. The duties, in 2 departments, will be chiefly in connection with infectious and venereal diseases, the former including a substantial proportion of cases in children. The varied clinical work, including acute medical cases and early pulmonary tuberculosis, provides valuable experience, particularly to those reading for a higher medical degree or contemplating General Practice. The appointment will be for 1 year and there is an immediate vacancy.

Applications, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. HOUSE PHYSICIAN (resident, Male) post vacant 4th December, 1956. Recognised pre-registration post which offers excellent experience.

Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

POOLE GENERAL HOSPITAL Poole Dorset. Bourne-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (pre-registration) required for post becoming vacant on 26th December, 1956.

Applications to Hospital Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bourne-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS (pre-registration) required for 1st and 19th December. Posts recognised for F.R.C.S. and F.R.C.S.Ed.

Applications to Hospital Secretary.

PORT TALBOT GENERAL HOSPITAL, Hospital-road, PORT TALBOT. Applications are invited for the post of HOUSE SURGEON. Appointment available immediately.

Applications, giving full details of age, qualifications, experience, &c., and naming 2 referees, to be addressed to the Group Secretary of the Committee, Mid-Glamorgan Hospital Management Committee, 8, Wind-street, Neath.

READING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant mid-December. Recognised for F.R.C.S. Duties including work in area Casualty Department at Battle Hospital, Reading (300 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating nationality, present post and qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered and provisionally registered medical practitioners for 2 posts as RESIDENT HOUSE PHYSICIAN vacant on 1st December, 1956, for a period of 6 months. Successful applicants will be required to carry out duties at the following Reading Hospitals: Royal Berkshire (398 Beds), Battle (300 Beds) and Prospect Park (104 Beds).

Write, before 16th November, stating age, qualifications with dates, nationality, present post, with copy of a recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON (orthopædic) in the Area Accident and Orthopædic Department. Post now vacant. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £150 board-residence.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (339 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of a SENIOR HOUSE OFFICER (anæsthetics), vacant 1st January, 1957, for a period of 1 year. Post recognised for F.F.A.R.C.S. Salary £745 p.a., less £150 for board-residence.

Write, stating age, qualifications with dates, nationality and present post, together with the names of 3 referees, to the Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (398 Beds.) Applications are invited from provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 1st December, 1956, and tenable for 6 months.

Write, before 16th November, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. Applications are invited from registered medical practitioners only for the post of RESIDENT ASSISTANT PATHOLOGIST vacant 6th December and tenable for 6 months. Salary £525 p.a.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Department of Pathology of the Rochdale Group of hospitals. The duties will consist mainly of clinical pathology, also general and emergency work and supervision of the blood banks. Previous pathology experience is not essential.

Applications, giving usual particulars and names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Pædiatrics. DUNDEE GENERAL HOSPITALS. Applications are invited for the post of SENIOR REGISTRAR in Pædiatrics in the Professorial Units at Dundee Royal Infirmary (534 Beds) and Maryfield Hospital, Dundee (370 Beds), the main teaching hospitals associated with the University of St. Andrews. The duties will include teaching of undergraduates. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 17th November, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. ASHLUDIE HOSPITAL, MONIFIETH, DUNDEE. Thoracic Surgery. Applications are invited for the appointment of SENIOR REGISTRAR in Thoracic Surgery at Ashludie Hospital, Monifieth, near Dundee (222 Beds), which contains the Regional Thoracic Surgical Unit of 66 Beds for tuberculous and non-tuberculous cases. Higher surgical qualification and previous experience in thoracic surgery essential; additional experience in general or chest medicine an advantage. Salary and conditions of service in accordance with national agreement.

Forms of application and further particulars from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 17th November, 1956.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR to the Respiratory Diseases Unit, vacant on 7th March, 1957. Duties will be with either the Edinburgh Royal Victoria and Associated Hospitals or the Edinburgh Northern Group of hospitals and may involve work with both tuberculous and non-tuberculous diseases of the chest. The post is associated with the Department of Tuberculosis and Diseases of the Respiratory System, University of Edinburgh, and the holder will be expected to assist with teaching and research.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 24th November.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Radiodiagnosis based at the Victoria Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 10th November, 1956.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (267 Beds. Recognised for training for F.R.C.S.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY. ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination. Vacant now.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR REGISTRAR in Orthopædics (transitional appointment) required. Main duties at the Nottingham City Hospital with duties also at the Children's and General Hospitals. Appointment for 1 year in first instance. Applications invited from Senior Registrars in Orthopædics in their fourth or subsequent years and from those who held such posts for 3 years or more but vacated them after 1st January, 1951.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th November, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts:—

Royal Infirmary Unit

(*a*) REGISTRAR or SENIOR HOUSE OFFICER in General Medicine. Grade according to qualifications and experience. Post vacant 3rd January, 1957. The successful candidate will work principally in the Professorial Unit (Therapeutics) at the above Hospital.

Closing date for applications 12th November, 1956.

(*b*) RESIDENT SENIOR HOUSE OFFICER in Anæsthetics. Post vacant 9th January, 1957.

Applications to be sent at once.

Royal Hospital Unit

(*c*) NON-RESIDENT REGISTRAR in Ophthalmology.

Closing date for applications 12th November, 1956.

(*d*) RESIDENT SENIOR HOUSE OFFICER in Clinical Pathology. Post vacant 1st January, 1957. Pathological experience not essential. The successful candidate will work in turn in the different branches of clinical pathology in the laboratories of The United Sheffield Hospitals.

Applications to be sent at once.

Applications for the above posts should state age, qualifications and experience, give the names of 3 referees and be sent as follows:—

For posts (*a*) and (*c*): The Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

For post (*b*): The Superintendent, Royal Infirmary, Infirmary-road, Sheffield, 6.

For post (*d*): The Superintendent, Royal Hospital, West-street, Sheffield, 1.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 1st January, 1957, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON to the Obstetric and Gynæcological Department which becomes vacant on 1st January, 1957. The post is open to pre-registration candidates and is recognised for the Diploma and Membership of the Royal College.

Apply, enclosing names of 2 recent referees, and stating age, nationality, qualifications and experience, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, by 17th November, 1956.

SOUTHAMPTON CHEST HOSPITAL. Locum Surgical REGISTRAR required immediately for the Thoracic Unit (80 surgical beds) at the above Hospital. Candidates should possess higher qualifications and have had previous experience of thoracic surgery.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (274 Beds) and SOUTHAMPTON GENERAL HOSPITAL (472 Beds). SENIOR HOUSE OFFICER (E.N.T.) required immediately. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work. The Group includes a diagnostic and distributing Hearing Aid Centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (472 Beds.) RESIDENT HOUSE SURGEON required mid-November. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND GENERAL HOSPITAL. Applications are invited for appointment as HOUSE PHYSICIAN (pre-registration), post vacant 1st December, 1956.

Applications, stating age, qualifications and previous experience with copies of recent testimonials (1 testimonial sufficient from applicant for first appointment), to reach the undersigned by 16th November, 1956. J. C. FIELD, Secretary.

STOCKPORT. STEPPING HILL HOSPITAL. (835 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgery), vacant 16th December, 1956. The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

STOKE-ON-TRENT. HAYWOOD HOSPITAL. (96 Beds.) RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer) required. Combined duties on surgical and medical wards. Possibility of married accommodation.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

ST. ALBANS, HERTFORDSHIRE. NAPSBURY MENTAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER, appointment to commence immediately. Previous experience as House Physician or House Surgeon essential. Previous psychiatric experience desirable but not essential. Regular clinical case conferences, good psychiatric library and other training facilities. Salary £745 p.a. Residential accommodation is available, if required, for which a charge will be made. No married quarters.

Applications, with reference or testimonials, to be sent not later than 13th November, 1956, to the Medical Superintendent (Telephone: Bowmansgreen 2181).

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. WHISTON HOSPITAL, PRESCOT (892 Beds), ST. HELENS HOSPITAL (196 Beds). Applications are invited for the appointment of CASUALTY OFFICER, in the Senior House Officer grade, at each of the above Hospitals. The posts are approved for the 6 months training in casualty work required of candidates for the Fellowship examination of the Royal College of Surgeons.

Applications, stating age, qualifications and experience, and giving 2 names for reference, and stating for which Hospital application is made, should be forwarded immediately to—

N. RICHARDS, Group Secretary.

Whiston Hospital, Prescot.

SUTTON. BELMONT HOSPITAL. St. Ebba's and BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment of PSYCHIATRIC REGISTRAR at above Hospital which is principally concerned with the treatment of neuroses and the early psychoses. In addition to undertaking clinical duties the successful candidate will be expected to work in the Department of Encephalography under the direction of the Doctor-in-charge. There are ample opportunities for research and the Hospital, which is recognised for the D.P.M., takes an active part in teaching in association with teaching hospitals. Candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms (5 copies) should be returned to him within 2 weeks of the appearance of this advertisement.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. RESIDENT MEDICAL REGISTRAR required at above Hospital.

Application forms from, and returnable to, Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 18th November.

TAUNTON AND SOMERSET HOSPITAL. Senior HOUSE OFFICER (medical) with some pathological duties. Post now vacant.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton Somerset.

TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. 2 SENIOR HOUSE OFFICERS (anæsthetics) required for the Tees-side Group of hospitals. The Group is recognised for the F.F.A.R.C.S. and D.A. Facilities are available for postgraduate study and emergency work is by rota.

Applications, with copies of 3 testimonials, to—

Dr. J. G. WARNOCK.

North Ormesby Hospital, Middlesbrough.

VENTNOR, I. of W. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (240 Beds.) Required, RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER, post vacant end December. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WARLINGHAM PARK HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment of REGISTRAR. Opportunity will be given for experience in all branches of psychiatry, psychoneurosis, industrial psychiatry, delinquency and child guidance. Candidates may visit the Hospital by arrangement with the Medical Superintendent.

Application forms obtainable from Group Secretary, Warlingham Park Hospital, Warlingham, Surrey, should be returned within 14 days from the date of this advertisement.

WARRINGTON GENERAL HOSPITAL. (344 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pædiatrics), Male or Female, which will become vacant on 1st December, 1956. (Post recognised for D.C.H.) Scale of salary £745 p.a., less £150 for residential emoluments.

Applications to be forwarded to—

HENRY L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WILLERBY, EAST YORKSHIRE (near HULL). DE LA POLE HOSPITAL. (1174 Beds—mental illness and nervous disorders.)

(*a*) JUNIOR HOSPITAL MEDICAL OFFICER. The successful candidate will be engaged on work in the admission wards to a considerable extent and for duties at a Psychiatric Day Clinic to be opened shortly.

(*b*) JUNIOR HOSPITAL MEDICAL OFFICER. This is a newly established post which is intended to give the successful candidate a good indication of Mental Hospital Practices.

Hospital has admission-rate of over 850 annually. Modern reception hospital, villas and neurosis unit. All modern methods of treatment practised. If desired facilities for attending the Leeds University will be provided if studying for the D.P.M.

Application forms from Group Secretary, Hull B Hospital Management Committee, at the above address.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-PITAL. (313 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 1st December.

Applications, with copies of 2 testimonials, to the Group Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General Surgery required, Male or Female, for post vacant 1st January. Preference given to persons seeking pre-registration post. Recognised for F.R.C.S. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, with copies of recent testimonials, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN (pædiatrics) required, Male or Female, for post vacant end of December. Preference given to persons seeking a pre-registration post. Hospital recognised for D.C.H. Successful candidate will be resident at Old Windsor Unit of Hospital. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 3 testimonials, to Secretary.

WALTHAM ABBEY. HONEY LANE HOSPITAL. Junior HOSPITAL MEDICAL OFFICER as senior resident in modern hospital of 116 Beds, situated in pleasant rural surroundings, with responsibility for day-to-day care of tuberculosis and infectious diseases wards. Relief duties on medical wards. Modern house with garage available for married man, or comfortable resident quarters if single. Previous experience considered with view to possibility of accelerated increments above normal starting point on salary scale.

Apply, with 2 names for reference, to Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 16th November, 1956.

WARWICK (near). CENTRAL MENTAL HOSPITAL. (1400 Beds.) SENIOR HOUSE OFFICER. Neurosis Unit, adult and child psychiatry clinics, Departments of Electroencephalography, Occupational Therapy, Psychology and social work. Recognised for D.P.M. House or flat available.

Applications, with names and addresses of 3 referees, to Medical Superintendent within 14 days.

WIGAN (near). WRIGHTINGTON HOSPITAL. Junior HOSPITAL MEDICAL OFFICER required (resident or non-resident). Manchester Regional Centre for orthopædic tuberculosis, 200 adults and 100 children. Salary £775–£50–£1075 p.a.

Apply to Secretary with 2 references.

WORCESTER ROYAL INFIRMARY. House Physician (Pædiatrics) required. Hospital recognised for D.C.H.

Applications to Secretary.

YEOVIL HOSPITAL, Somerset. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical). Yeovil is the main general hospital of a Group and affords good all-round practical experience. Salary £745 p.a.

Applications, giving age, experience, qualifications, nationality, and names of 3 referees, to be sent to the Group Secretary, South Somerset Hospital Management Committee, 71, Higher-kingston, Yeovil.

CANADA. KINGSTON GENERAL HOSPITAL, Kingston, ONTARIO. Canadian Teaching Hospital associated with Queen's University Faculty of Medicine, offers 12-month ROTATING INTERNESHIPS commencing 1st July, 1957. Honorarium $100 per month plus residential emoluments.

Apply to the Superintendent.

U.S.A. TOLEDO HOSPITAL, 2142, North Cove-boulevard, TOLEDO, OHIO. INTERNS-ROTATING SERVICE of 12 months starting 1st July, 1957. Fully approved 450-Bed Hospital. Excellent training in various fields of medicine. Great Lakes Port City. Full maintenance for Interns. Apartments provided for families. Stipend $200 per month.

Write to Superintendent.

Public Appointments

ADMINISTRATIVE COUNTY OF LONDON. Metro-POLITAN BOROUGH OF WANDSWORTH. Combined appointments of DEPUTY DIVISIONAL MEDICAL OFFICER AND DEPUTY MEDICAL OFFICER OF HEALTH of Wandsworth. The London County Council and the Metropolitan Borough Council of Wandsworth invite applications from registered medical practitioners holding a Diploma in Public Health for the combined appointment of Deputy Divisional Medical Officer of the County Council's Health Division 9, comprising the Metropolitan Boroughs of Battersea and Wandsworth, and Deputy Borough Medical Officer of Health for Wandsworth. Remuneration will be in accordance with the formula for mixed appointments approved by Committee "C" of the Medical Whitley Council and lying within the range £2028–£2368. Commencing salary within this range will depend on the points on the constituent scales at which the 2 authorities respectively place the successful candidate. These 2 scales are: Deputy Divisional Medical Officer £1675–£55–£2005 and Deputy Borough Medical Officer of Health, £1910–£105–£2120–£55–£2175.

Full particulars of the combined appointments and application forms may be obtained from the Clerk of the London County Council (W1), The County Hall, Westminster Bridge, London, S.E.1. Completed forms should be returned by not later than first post on Monday, 19th November, 1956. (2078.)

GOVERNMENT OF SINGAPORE. Senior Registrar (pathology) required for pathological duties in Singapore General Hospital, a teaching hospital. Candidates must possess qualifications registrable in the United Kingdom and Diploma in Clinical Pathology or acceptable equivalent. Appointment on contract for 3 years resident service. Salary scale £1540–£1988 a year, plus expatriation pay of £350 a year and temporary variable allowance of £210 a year for single officers, £392 for married officers without dependent children and £539–£560 a year for officers with dependent children. Gratuity (taxable) payable after completion of contract from £370 to £450 for each year depending on salary. Special arrangements can be made for a candidate from the National Health Service who wishes to retain his superannuation rights. European children do well in Singapore up to age of about 6 and schools are available locally. Income-tax at local rates. Government quarters with heavy furniture rentable if available or allowance in lieu. Free passages for Officer, wife, and children under 10 years not exceeding 4 persons besides himself. Generous leave.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/25/016).

GLOUCESTERSHIRE COUNTY COUNCIL. Applications are invited for the appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Salary £1050 p.a.–£1475 p.a. Commencing salary will be determined on previous experience. Applicants must be registered medical practitioners and possession of a Diploma or Certificate in Public Health would be an advantage. Superannuable post: medical examination. Car driver and should possess a motor-car.

Forms of application, with conditions, obtainable from County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent by 24th November, 1956. Canvassing disqualifies.

GUY H. DAVIS, Clerk of the County Council.

GOVERNMENT OF THE FEDERATION OF RHODESIA AND NYASALAND. MINISTRY OF HEALTH. Applications are invited for appointments as RADIOLOGISTS in the Ministry of Health, with fixed salary at the rate of £2250 p.a. Duties will include radiodiagnosis, radiotherapy and the training of Radiographers for the M.S.R. Diploma.

Application forms and further particulars may be obtained from the Public Service Attaché, Rhodesia House, 429, Strand, London, W.C.2. Closing date 1st December.

PORTSMOUTH. CITY OF PORTSMOUTH. Applications are invited for the appointment of SCHOOL MEDICAL OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH. The duties of the appointment will include school eye clinic work (refraction) on behalf of the South West Metropolitan Hospital Board. Preference will be given to applicants possessing special knowledge and experience in school medical work and the diseases of children, particularly in ophthalmic work for which appropriate qualifications are essential. The salary and conditions of service are those of the Whitley Council for the Health Services (Great Britain) Medical Council "C."

Application forms may be obtained from the Chief Education Officer, 1, Western-parade, Portsmouth, to whom they should be returned within 14 days of the appearance of this advertisement.

V. BLANCHARD, Town Clerk.

HER MAJESTY'S OVERSEA CIVIL SERVICE. Uganda. MEDICAL OFFICERS with qualifications registrable in the United Kingdom required for general duties and to assist with training subordinate African medical staff. Appointment on permanent basis with pension (non-contributory) or on short-term contract with gratuity. Salary from £1284 to £2115 a year, starting-point determined by qualifications and experience. Pension earned at rate of 1/600th of final pensionable emoluments for each completed month of service. Gratuity (taxable) for contract service is 13½% of total salary drawn, not including allowances. Candidates in National Health Service may leave but retain their superannuation rights up to 6 years and receive gratuity (taxable) of 20% of their salary after engagements. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Uganda and other territories in medical administration or, if they possess appropriate qualifications and suitable experience, in specialist posts. Quarters, if available, provided at low rental, furniture supplied at rental of £12–£24 a year. Free passages provided in both directions; for officers serving tour of 30–36 months, 4 air passages for Officer, wife, and dependent children or sea passages up to cost of 3 adult fares; for officers serving short tours of 12–18 months, passages for Officer, wife, and all dependent children. Educational subsidies are payable to officers, which vary from £90 a year (or half the school fees, whichever is less), for primary education for first child, to £190 a year (or three-fifths of school fees, whichever is less) for secondary education for each of second and subsequent children. Education facilities are available in East Africa, though many parents send their children to United Kingdom for secondary education. Income-tax at local rates. Local leave permissible and generous home leave granted after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/9/02).

HER MAJESTY'S OVERSEA SERVICE. South Pacific HEALTH SERVICE. MEDICAL OFFICERS required for general medical duties in the South Pacific Health Service which includes posts in the Colony of Fiji, the British Solomon Islands Protectorate, the Gilbert and Ellice Islands Colony, and the British Service in the New Hebrides (Anglo-French Condominium). A selected candidate is normally posted to fill a particular vacancy in 1 of the above territories in the first instance but he may be transferred to any station within the South Pacific Health Service. For Fiji and Niue, the salary scale ranges from £F960 to £F1850 p.a. (£F111 = £100 sterling). For Honiara, the salary scale, including pay differential, is £A1242–£A2160 p.a. (£A125 = £100 sterling). Starting salary determined according to qualifications and experience. Appointments permanent and pensionable (non-contributory) or on short-term contract for 3 years in first instance with gratuity (taxable). Quarters containing heavy furnishing provided if available at low rental. Income-tax at local rates. Free passages provided on appointment and completion of contract for Officer, wife, and children up to cost of 4 adult passages (5 if appointed to Honiara). Leave passages up to 3 adult fares. Length of tour 2–4 years, according to local regulations and length of service. Mid-tour leave in Australia or New Zealand may be permissible in certain circumstances. Schools in Fiji and Honiara, but many officers stationed elsewhere send their children to school in New Zealand or Australia. Educational allowance in Honiara for children educated outside territory. Permanent officers eligible to be selected for transfer or promotion to other Colonial territories if they wish when vacancies occur. Candidates must possess medical qualifications registrable in the United Kingdom. For appointment to Niue previous knowledge of tropical diseases and ability to undertake emergency major surgery an advantage.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting reference No. BCD.117/162/01).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Federation OF NIGERIA. SPECIALIST (Pædiatrician) required for pædiatric work in the clinical units of the Federal Medical Service and for administration of preventive medicine as it relates to the diseases of children. Candidates must possess medical qualification registrable in United Kingdom and be member of 1 of the Royal Colleges of Physicians (or F.R.F.P.S.) who has specialised in pædiatrics.

Appointment may be made:—

(*a*) On 3 years probation for permanent and pensionable employment. Pension (non-contributory) at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From the National Health Service. Candidate may leave but retain superannuation rights up to 6 years and receive gratuity (taxable) of 20% of aggregate of salary.

Salary for officer appointed under (*a*) or (*b*) is £2220 a year.

or (*c*) on short-term contract (2 tours each of 18–24 months) with salary of £2664 and gratuity (taxable) of £37 10s. for each completed period of 3 months service (including leave).

Officer appointed under (*a*) or (*c*) is required to contribute to a Widows' and Orphans' Pension Scheme.

Quarters at low rental. Free return passages for Officer and wife. Return passages for children, to age 18, provided this does not exceed cost of 2 adult return passages in any 1 tour of service. Children's (separate domicile) allowance of £75 a year for each child under 18, ceasing if children join parents in Nigeria. Income-tax at low local rates. Local leave permissible and generous home leave after each tour.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting No. BCD. 117/14/048).

HER MAJESTY'S OVERSEA SERVICE. Kenya. Medical OFFICERS with qualifications registrable in United Kingdom required for general duties. Successful candidates may be posted to any station in Kenya. During earlier years of service an officer will be expected to carry out general medical and surgical duties including varying amount of public-health administration. In most stations, even if remote from the larger towns, it is possible to maintain interest in any particular branch of medicine or surgery, to which the officer is attracted. The work of every medical officer is based on a hospital which may vary in size and facilities from small district hospital, meeting needs of comparatively primitive community, to large and modern provincial hospital. Appointments can be made on permanent basis with pension (non-contributory), or on short-term contract with gratuity (taxable) payable on satisfactory completion of service. Normal retiring age is 55. Salary ranges from £1284 to £2115 a year, starting point determined by experience. 4 extra increments given to successful candidates possessing the F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administrations or, if they possess higher qualification and suitable experience, in specialist posts. Quarters at rental varying from £30 to £78 a year according to size and type, and furniture at rate varying from £15 to £36 a year. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 24 to 45 months. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, Great Smith-street, London, S.W.1 (quoting No. BCD. 117/7/02).

HUDDERSFIELD. COUNTY BOROUGH OF HUDDERSFIELD. Applications are invited from duly qualified medical practitioners for the appointment of MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER of the County Borough of Huddersfield at a salary of £2070, rising by 5 annual increments to £2340 (in accordance with the incremental scale of the Whitley Council for the Health Services Committee C). There is a car allowance of £131 p.a. Applicants must possess a Diploma in Public Health or a similar qualification and should have had experience in the administration of the Public Health and School Medical Services. The person appointed will be required to reside in the Borough, to devote the whole of his time to the duties of the office, and not to engage in private practice. The appointment is subject to the provisions of the appropriate superannuation act, to the passing of a medical examination and to termination by 3 months written notice on either side.

Applications, stating age, qualifications and experience, accompanied by 3 recent testimonials and endorsed "Medical Officer of Health," must reach me not later than Tuesday, 6th November, 1956.

Town Hall, Huddersfield. HARRY BANN, Town Clerk.

MINISTRY OF SUPPLY. Industrial Medical Officer (unestablished) required for full-time duty in the provinces. Applications invited from registered medical practitioners of British nationality. Previous experience in industrial medicine or possession of Diploma in Industrial Health will be an asset. Opportunities for establishment occur annually. Salary: £1550 (age 35)–£2150. Starting salary according to age up to £1950 at age 40 or over.

Write, giving date of birth, sex, education, full details of qualifications and experience of posts held (including dates) to BZ. 116, London Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, W.C.1, by 17th November, 1956.

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT EDUCATION COMMITTEE. SCHOOL HEALTH SERVICE. OPHTHALMOLOGIST required to undertake refraction work in the school clinics on a sessional basis for up to 10 sessions per week during school terms. Remuneration at the rate of £6 6s. per session.

Form of application may be obtained from H. DIBDEN, Chief Education Officer, Education Offices, P.O. Box No. 23, Town Hall, Hanley, Stoke-on-Trent.

SURREY COUNTY COUNCIL. Appointment of Assistant MEDICAL OFFICER (Male). Applications are invited from candidates possessing the D.P.H. or D.C.H. Main duties will be in connection with the School Health and Maternity and Child Welfare Services. Salary according to experience on the scale £1050–£50–£1200–£55–£1475 p.a. The appointment is subject to satisfactory medical examination, to the provisions of the Local Government Superannuation Acts, 1937–1953, and to 3 months notice on either side.

Application form from the County Medical Officer, County Hall, Kingston upon Thames, to be returned by 17th November, 1956.

SOUTH CORK BOARD OF PUBLIC ASSISTANCE. Vacancy for Temporary ASSISTANT ORTHOPÆDIC SURGEON.

Application forms and further particulars may be obtained from The County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than NOON on Saturday, 10th November, 1956.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Beverley, Cherry Burton, Dalton Holme and Walkington (Beverley).
Corfe Castle (Bournemouth).
Coventry West (Coventry).
Ramsey, Kirk Michael, Ballaugh, Sulby and Kirk Andreas (Douglas, Isle of Man).
Rawdon (Leeds).
Kirkby (Liverpool).
Teignmouth (Newton Abbot).
Winkleigh (Okehampton).
Kirkby-in-Ashfield (Nottingham).
Disley, Hayfield, New Mills, Strines and Furness Vale (Stockport).
Waterfoot (Rossendale).
Leigh-on-Sea (Southend-on-Sea).

SCOTLAND

Girvan (Girvan).
Bruichladdich, Gruinart, Port Charlotte and Portnahaven (Port Ellen).

NORTHERN IRELAND

Strabane (Strabane).

WORCESTERSHIRE COUNTY COUNCIL. Assistant COUNTY MEDICAL OFFICER OF HEALTH (Worcestershire) MEDICAL OFFICER OF HEALTH (Evesham Borough and Evesham and Pershore Rural Districts). Applications are invited from registered medical practitioners with D.P.H for this combined appointment. Salary between minimum of £1475 and maximum of £1860 p.a.

Application forms, with details from County Medical Officer, County Buildings, Worcester. (O.183.)

YORKSHIRE. DIVISIONAL ADMINISTRATION OF THE PREVENTIVE MEDICAL SERVICES IN THE ADMINISTRATIVE COUNTY OF THE WEST RIDING OF YORKSHIRE. Appointment of MEDICAL OFFICER OF HEALTH AND DIVISIONAL MEDICAL OFFICER to Morley Borough, Ossett Borough, Horbury Urban and Wakefield Rural District Councils and the County Council of the West Riding of Yorkshire. Applications are invited from registered medical practitioners who must also be registered in the medical register as the holder of a Diploma in Sanitary Science, Public Health, or State Medicine, for the above-mentioned whole-time appointment. The effect of the "mixed" appointment will be to secure that the planning of the day-to-day administration and the execution of all or practically all public-health matters of the division will be in the hands of 1 person, the Divisional Medical Officer of Health. A Divisional Public Health office with necessary staff will be provided.

The salary attached to the post is as follows :—

(*a*) For Medical Officer of Health duties £975–£27 10s.(4)–£25(1)–£1110.

(*b*) For County Council duties £981 5s.–£31 5s.(1)–£34 7s. 6d.(7)–£1253 2s. 6d.

(The salary scales have been calculated in accordance with the recent award to Public Health Medical Officers.) In addition, there will be a travelling and subsistence allowance at the rate of £180 p.a.

The appointment will be made jointly by the District Councils and the County Council and the person appointed will not be permitted to engage in private practice.

Forms of application containing particulars of duties and terms and conditions of service may be obtained from the County Medical Officer, County Hall, Wakefield, to whom completed forms must be returned not later than 21st November, 1956. Canvassing of members of the appointing bodies directly or indirectly will disqualify any candidate for the post.

E. V. FINNIGAN, Town Clerk, Morley.
J. WOOD-WILSON, County Medical Officer.

General Practice

Assistant with view to Partnership required in busy practice on North East Coast.—Applications, with names of 3 referees, to : Address, No. 256, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Hospital Services : Non-Medical Appointments

BIRMINGHAM 15. THE QUEEN ELIZABETH HOSPITAL. BIOCHEMIST (Basic Grade) required for the Biochemical Laboratory at above Hospital. Candidates must hold a University Degree in Science or the Associateship of the Royal Institute of Chemistry. Salary according to Whitley Council scales with allowances for postgraduate study or experience.

Applications to be sent as soon as possible to the House Governor, the Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited from Science Graduates for a post of NON-MEDICAL ASSISTANT BIOCHEMIST in the Board's Regional Laboratory Service at the Royal Northern Infirmary, Inverness. The post is in the basic grade, and the salary scale for candidates who have completed the probationary period is £650–£30(3)–£35(3)–£845 p.a.

Further particulars and application forms are obtainable from the undersigned, with whom applications should be lodged by 15th November, 1956. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

Miscellaneous

Radiographer, Female, required by Western Memorial Hospital, Corner Brook, Newfoundland, to take charge of the X-ray Department, and to supervise and train unqualified assistants. Applicants should be members of the Society of Radiographers or the equivalent. The commencing salary is $2800 a year.—Interested candidates may obtain additional details from Staff Administration, THE BOWATER PAPER CORPORATION LIMITED, Stratton-street, London, W.1.

The National Marriage Guidance Council invites applications for the appointment of a part-time Regional Tutor in the Leeds area to assist in the supervision and further training of voluntary part-time marriage counsellors. Professional qualifications in psychology, psychiatry or social science are required and experience in the training and supervision of social workers would be an advantage. The appointment will involve the equivalent of 1 working day per week and the salary offered is £150 p.a. plus travelling expenses.

Further particulars and application form from Training Officer, National Marriage Guidance Council, 78, Duke-street, London, W.1.

Medical Speciality House wishes to appoint a qualified medical practitioner as a full-time Medical Adviser, to be responsible for the organisation of clinical trials and the drafting of promotional medical literature and to advise on all medical aspects of the development and marketing of ethical medical specialities. Applicants should preferably be of age 30/35 and have had some experience in general practice. The position can be permanent and progressive and the successful candidate will be eligible to join the superannuation scheme.

Applications in writing, stating brief details of career may be addressed to the Secretary, BRITISH SCHERING LTD., 229, Kensington High-street, London, W.8.

Imperial Chemical Industries Limited has a vacancy in its Chemotherapeutic Research Laboratories for a Junior Bacteriologist (Male or Female) for which some previous experience in research would be an advantage. Salary according to age and experience. The successful candidate will be required to work in North Manchester initially but will be transferred early in 1957 to new Research Laboratories at present under construction at Alderley Park in Cheshire.—Applications with full particulars should be addressed to Staff Department (8), Imperial Chemical (Pharmaceuticals) Limited, Fulshaw Hall, Wilmslow, Cheshire.

Educated Widow, good appearance, age 44, requires position Receptionist, London area. Free 11th November.—Address : Well Cottage, Easthorpe, near Kelvedon, Essex.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

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Institute of Microbiology and Hygiene of the University of Montreal would like to buy numbers of *The Lancet* from January to April included 1955. Ready to pay 1s. 3d. in excess of the official price per number.—Please contact LIBRARIAN of the above-mentioned Institute before sending.

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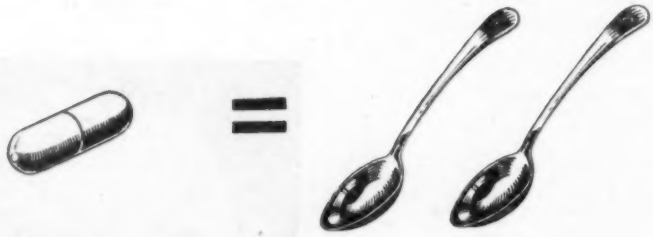

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